

# **MAKING A THIRD PLACE: THE SCIENCE AND THE POETRY OF HUSBANDRY**

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I certify that this thesis is the true and accurate version of the thesis  
approved by the examiners.

Signed.....Date.....

(Director of Studies)

## **DECLARATION**

I, Sandra Dawn Wood, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I can confirm that this has been indicated in the thesis.

Signed ..... Date .....

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To my father, Bertie McFarland (1923-2001)

## ABSTRACT

It locally contains or heaven, or hell;  
There's no third place in't.

(Webster 1993)

Husbandry in its original sense is a 'being together', based on dwelling in a particular place. There is an intricate connection between modern science and industrialised agriculture, both of which developed on the basis of particular values associated with Good Husbandry – those which focused on individual innovation, profit-related productivity, quantitative measurement, objective, 'puritan' truth and control of nature. Ideals of the earth as a 'commonwealth', and of traditional stewardship, were down-played. The writings of Francis Bacon provide an example of a positivist, pioneering attitude which has continued to underpin modern science. In retrospect, however, these ideals sound rather one-sided. Nature herself is not well represented in the modern science relationship. In this thesis, Virgil's *Georgics* and Lucretius' *de rerum natura* are used to derive a poetics of Being and of Husbandry, which applies not only to the world of poetry, but to events which underlie scientific research. Virgil's use of verbs verifies that life's activities are shared by all living things. Lucretius asserts that even inanimate atoms both exist in themselves and are creative. 'To be' can be visualised as a dynamic, balancing act between striving to stay in being and longing to engage creatively with another. The basis of this thesis is that a shaping of research towards good husbandry involves a fair relationship with nature, which in turn involves the acknowledgement in writing that nature is active, dynamic and a good collaborator. Husbandry defined as a continually unfolding third place between extremes or between self and other – this holistic, concentric definition – applies at all scales, all levels of experience. This work was derived from practice-led research involving the writing of poetry and therefore the findings exist in parallel as a sequence of poems.

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*Note: poems have been removed from this version for reasons of copyright.*

NOTE:

Where extracts from Lucretius' *de rerum natura* and Virgil's *Georgics* are presented in the main body of the thesis, these are my own versions derived from the Latin texts. The original Latin text and a published translation are given for each extract in the Appendices.

## **Chapter 1: Husbandry as a Third Place**

- 1.1 Husbandry: Etymology and Early Usage
- 1.2 Poetic Wisdom of Husbandry
- 1.3 Ancient Greek and Roman Writing on Agriculture
- 1.4 Husbandry and Modern Science

In this chapter, the etymology and historical use of the word 'husbandry' and the concept are explored. The philosophical connection between husbandry and poetry is justified as being both ongoing and ancient. The association between values of 'Good Husbandry' and modern science is staged. Also introduced, is the idea that the body of husbandry is open to being shaped – and that she, *Agricultura*, could be written variously, even given the power to sing. Finally, this chapter presents the idea that husbandry is the achievement of a third place between extremes or between previously disconnected entities.

The poems of this chapter introduce the themes of the thesis. Husbanding Husbandry uses the writing of Lucius Columella to present the idea of husbandry as 'a third place' or a middle ground – this is reflected in the poem where at times the lineation breaks to reflect the theme. A female voice is represented as a counter to a husbandman/ sculptor's perspective in Galatea. Also various perspectives are alluded to in Exchange, where the setting is a Neolithic town, during a recent 'Goddess Conversation' conference which was arranged to explore aspects of non-patriarchal societies. *In vivo* and Magnificat are linked and based on my experiences as a laboratory researcher which, in the context of my life, was associated with wanting to have a child. Magnificat is also an expression of the holistic way of seeing, whereby the part is intimated in the whole. Valentine returns to the research process, depicting it as a creative act, in this instance, a famously successful piece of work, the abstract of which is presented here. The poem was written for Bill Ritchie, the technician who was involved in the production of Dolly at the Roslin Research Institute, Edinburgh. The idea of sheep creeping on hillsides is a Lucretian metaphor for the movement of atoms.

Poems:

HUSBANDING HUSBANDRY

GALATEA

EXCHANGE

*IN VIVO*

MAGNIFICAT

VALENTINE

*Note: pages with poems have been removed for reasons of copyright.*

## 1.1 Husbandry: Etymology and Early Usage

‘Rare single words can imply, like seeds, whole energy systems.’ (Kenner 1991, p.171). One such word, which provides the focus for this thesis, is ‘husbandry’. It encapsulates more than one thousand years worth of human experience, and shifting sociological, political and religious ideologies, all concerning the relationship between humans and nature. The word can serve as a locus about which to unravel practical and philosophical enquiry, with a view to thinking about human-and-nature; human-and-earth; human-and-animal relationships. Husbandry, as a poetic concept, can be considered as the making of a third place between extremes. It is a place of reconciliation and creative union between male and female, the practical and the philosophical, art and science. The third place is also seeded in any one creative act, the meeting between the idea and the medium – ‘the final sinking of each sovereignty in a common wholeness’ (Hilton 1961, p.772).

Husbandry originates from the Old Norse *hús-bondi*, the master or ‘goodman’ of a house, in turn derived from *hús*: ‘house’ and *bóandi*: ‘to dwell’, to have a household. *Bóandi* is related to the Germanic verb *bu*: ‘to dwell’. *Bóandi* can be traced further to the Indo-European base: *bheu-* or *bhu-* ‘to be’, which also gave rise to ‘to grow’, ‘to become’ and ‘being’. Other English words which are related by origin include: build, bower, neighbour, byre, boor, burly, band, bond and bound. The origins of husbandry associate ‘dwelling in a place’ and ‘farming the land’. It has been suggested that the word signified a settling within boundaries, a transition from the hunter-gatherer way of life towards that of domesticating crops and animals (Ayto 2001). It can be argued, however, that hunter-gatherer societies also practise husbandry, in that they manage natural resources to balance times of plenty and scarcity and to sustain close meaningful connections with the environment of which they are part (Ingold 2000). The managerial sense of husbandry can also be understood to signify an ongoing, creative, ‘being with’ nature.

Early written use of ‘husbondrie’ in fourteenth-century England relates to the management of a household or a farm and was also associated with skills of economy and profit.

The Oxford English Dictionary traces 'husbandman' therefore as: the head of the household (usage as early as 1000 CE); a farmer, tiller of the soil (1220); a man joined to a woman by marriage (1395) and a steward (1475) (Simpson and Weiner 1989). The Middle English Dictionary further identifies husbandman as: an inhabitant, a native, and notes usage as a medieval sir-name (Kuhn and Reidy 1963).

There is a strong Judeo-Christian heritage on husbandry as the ethical responsibility of stewardship of the land and of goods, and this will provide a line of enquiry through the religious and political definitions of ethical values associated with husbandry – and the consequent influence on modern science (see Chapter 4). In the Wycliffe translation of the Bible the husband is referred to on two occasions (Wycliffe 1993). In Matthew 24:43 he is the responsible head of the household:

But wite ye this, that if the hosebonde man wiste in what our the thefe were to come, certis he wolde wake, and suffre not his hous to be vndurmynd.

Matthew 20: 1 illustrates the agricultural connection:

The kyngdom of heuenes is lijc to an housbonde man, that wente out first bi the morewe, to hire werk men in to his vyneyerd.

In the New International Version of the Bible, 'hosebonde man' has become 'owner of the house' and 'landowner' respectively (NIV 1982). The original Greek οἰκοδεσποτης, which Wycliffe translates 'hosebonde man', literally means οἶκος, house and δεσποτης, a position or title of honour, i.e. 'lord of the house'. In English, we retain *oiko*, for example, in 'ecosystem'. Thus, and poetically speaking, the house in which we live is the earth. In this way, this composite word sparks a set of relationships within and between equivalent words, myths and knowledges in other languages, cultures and times.

'Lord' implies bonds of responsibility, authority and social hierarchical order, hence a wealth of politically and/or religiously orientated ideological writing,

within our Western European tradition, on 'good' husbandry. The discourse on husbandry, and the way in which the land is depicted, influences, at least to some extent, land guardianship, ownership and use. In this way the pen really does become the plough. Chapter 4 will consider sixteenth-century views of the 'commonweal' and ideals of stewardship as a God-given responsibility. These ideals were influenced during the Reformation in the United Kingdom to reflect Puritan and early capitalist philosophies. These were based on the individual, his work ethic of ingenuity and improvement, and on his possession of land (McRae 2002). However, as Columella (c. 60 CE) shows, a shaping of agriculture, based on national possession of the land, is a much older notion.

Gender is associated with the earliest appearance of husbandry, in divine marriage myths where both male and female are represented (see Chapter 1.2) and in patriarchal societies where land management is assumed to be a male responsibility. In the English language, the written association of husbandry in the agricultural sense, with marriage, dates from the late fourteenth century and often in literature the two meanings provide the basis of a pun. In the Merchant's Tale (c. 1393-1400) Chaucer writes:

"Ne take no wyf" quod he "for housbondrye,  
As for to spare in houshold thy dispense.

(Chaucer 1957)

The OED records, from *Beket* (c. 1290) the opinion 'Is wif gret lois made with hire housebonde' (Simpson and Weiner 1989). In John Webster's play, *The Duchess of Malfi* (performed between 1612 and 1614) dialogue takes place between the Duchess and the 'master of her household', Antonio, who later becomes her husband, so uniting both senses of the word. He is asked what he thinks of marriage and replies:

It locally contains or heaven, or hell;  
There's no third place in't.

1: i: 392-4 (Webster 1993, p.27)



This answer is significant for a variety of reasons, one of which is a reference to the agricultural meaning of husbandry as a grounding relationship, a 'middle ground', a binding of two different, perhaps seemingly oppositional partners. The idea that husbandry provides a 'third place' is a motif to which I will return throughout this thesis.

The way in which husbandry is used in the literature also regularly invokes the ancient association of the earth as female, for example, in another extract from The Duchess of Malfi:

So, now the ground's broke,  
You may discover what a wealthy mine  
I make you lord of.

1:1:427-9 (Webster 1993, p.28)

Shakespeare, particularly in his sonnets (originally published in 1609), used the trope of husbandry intensively, to argue that it was the duty of the beloved to reproduce and thus to preserve beauty as a legacy against the passing of time. The fourth sonnet, for example, begins:

Unthrifty loveliness, why doest thou spend  
Upon thyself thy beauty's legacy?  
Nature's bequest gives nothing but doth lend,  
And being frank she lends to those are free:  
Then Beauteous niggard, why doest thou abuse  
The bounteous largess given thee to give?  
Profitless usurer, why doest thou use  
So great a sum of sums yet canst not live?

(Shakespeare 2002, p.389)

Shakespeare is appealing to the conventional virtues of good stewardship, those of making the most of resources by wise management. This requires the investment of talents towards greater return and for future generations. The trope of husbandry allowed Shakespeare to demonstrate a similar quest for perpetuity in the writing of the sonnets, against a sixteenth-century backdrop of

religious and political flux. At this time there was a particularly close evolution of modern scientific ideals, agricultural practices, land ownership and religion. We will return to this historical period in Chapter 4.

## 1.2 Poetic Wisdom of Husbandry

Husbandry in the sense of 'dwelling with', a bonded, relational view of nature is older and more culturally widespread than the word itself. The intuitive knowledge of the natural world as a whole has been articulated and preserved in many ancient myths. This can provide a context where human activities, including cultivation, can be described in terms of the creative, reproductive impulse which sustains the whole of the natural world, the 'will to become many' (Shiva 1988, p.39). In Indian cosmology, for example, nature is known as an expression of male and female principles in conjunction. Thus the world is created as an ongoing expression of dynamic, interrelated diversity, involving 'dialectical play' between male and female, earth and sky, creation and destruction, cohesion and disintegration. This insight is also present in early European myths and indeed in myths throughout the world, where there is said to be a divine marriage between the sky god and the earth goddess. These universal myths have arisen as an expression of the most obvious of natural processes – fertility, the seasons, new birth and the dependence of all life on the sun and on rainfall. Earth-as-mother and sky-as-father are implied in the origins of language and the most fundamental of metaphors. The eighteenth-century originator of a 'new science' based on poetic wisdom, Giambattista Vico, argued that words originally mimicked the sounds they represented. He suggested that 'pa' and 'pape' were exclamations of wonder (Vico 1968, p.150). He did not draw attention, however, to the Latin *pater* associating rain and sky-father (etymologically related to 'open', presumably referring to the sky). In certain poems of this thesis, *In vivo*, *Magnificat*, *Gallows Hill*, therefore, rain or drops of liquid are used as a symbol of fertility (or indeed infertility).

The Indo-European origins of 'Jupiter' come from the sky: the prefix 'Ju' means light; and it has been suggested that 'Jupiter' could be interpreted as the much later Christian phrase, 'father in heaven' (Serres and Latour 1995, p.149). These connections relating to the prehistoric mind are of course speculative, but reflect a universal pattern throughout the world's cultures. That the earth

nurtures, as a mother nurtures her young, is a clear example of poetic wisdom/ a universal metaphor. According to Vico, the first fundamental myth was probably that of a thundering sky-god, 'Jove', who judges between right and wrong but also demonstrates divine providence. An obvious counterpart to such a deity is the female earth goddess who is responsible for fertility, nurturing and growth. Vico argued that right from the prehistoric outset of such a myth ethical values are implied, relating to providence, and authority (Vico 1968). Vico's evidence was linguistic, the poetic wisdom behind etymologies.

There are suggestions from archaeological findings that a female Goddess 'Cybele' was the first or primary deity, e.g. in Anatolia, where people settled in towns and animals were first domesticated, around 10,000 BCE. Goddess figurines are found relatively frequently in archaeological sites such as Çatalhöyük in the Çumra region of present-day Turkey. Carbon-dating suggests that this Neolithic town was inhabited between 6,800 and 5,700 BCE. The site is famous for wall paintings of animals (aurochs or wild bulls, vultures, leopards, wild boar) and for mother-goddess figurines. The archaeologist Ian Hodder has been project manager of the archaeological excavations since 1993. His aim is 'to integrate the archaeology with its natural, social and built environment' (Hodder 2008). Hodder's approach is focused on the development of reflexive methods in archaeology to suggest possible interpretations of artefacts and their contexts. He is keen to give voice to local people and to indigenous knowledge. Hodder and his team also engage in dialogue with Goddess scholars who are interested in this early example of Earth Goddess worship, and who consider the site to be sacred (Balter 2005). The poem *Exchange* was written on the occasion of a 'Goddess Conversation' conference at the Çatalhöyük site on July 17<sup>th</sup> 2005. The poem mentions the bones of a turtle. This is significant in Greek mythology since song was said to have originated when Apollo made the first lyre from a turtle shell. *Exchange* is, to some extent, a poem about the conditions which might be necessary in order to grant voice, perhaps where it has previously been excluded.

A major theme of this thesis is to focus on two key examples of Roman poetry on natural philosophy – Virgil's *Georgics* on farming and Lucretius' *de rerum natura* on science. In these works, linguistic connections such as those noticed by Vico may be readily found. Both writers use the myth of the divine marriage

as a fundamental metaphor for natural science and agricultural themes. The aim of this research is to seek ways in which writing itself can be allowed to shape a naturalistic husbandry, one which can work in achieving holistic knowledge and can incorporate intuitive and poetic understanding of the world. In the true sense of husbandry, knowledge is relational, it comes from human encounters with nature. Human-nature belonging is reciprocal, inherent, sustaining and essential. Examples of such close, indigenous wisdom can be drawn from indigenous people over the world, including the Aboriginal people of Australia, the people of the Andes in Ecuador, the Cherokee in Tennessee, the American Indian Diné and the Cree of North Eastern Canada, the Mayan cultures of Mexico and Central America (Whitt et al. 2001, Ingold 2000). Also closer to home, the Celtic tradition contains a strong intuition of the perfect Whole of the natural world, the relationship between extremes, the individual and the universal, 'the one and the many'. Interesting manifestations of indigenous wisdom are found, of course, where portrayal of animals is concerned.

This sort of bonded knowledge is not confined to history but being experienced and held in ordinary lives in the twenty-first century, where people work in close contact with the land and with animals. Certain insights gained in this way, however, contrast sharply with the rhetoric and practices of consumerism and technological development, which tend to separate humans from nature. Rationality is often taken to imply detachment and objectivity rather than connectedness. The attitude that 'culture' is separate from 'nature' has shaped Western twenty-first century science, art, education, agriculture, economics, ethics, medicine (Ingold 2000). It has been noted that this process of 'cultivation' began when various nomadic people settled in an urbanised culture depending on administration and writing (for example in eighth-century Baghdad, when paper was acquired from China) (Lindberg 1978, p.13). But in an ongoing sense in the twenty-first century, literature may be seen as a detachment from nature (Sagar 2005). In academic discourses, including those of the sciences, professional knowledge and technical writing reflect objective detachment and often function by means of highly specific terminologies. This is particularly striking when the relationship between humans and domesticated animals is considered and where animals are viewed as commodities rather than 'kin'. Yet, despite such detachment, in other arenas, the enduring questions of human enquiry are still being posed and will almost certainly

remain: how can we connect with nature? What should be the goals of our striving, of our desires? What are our responsibilities and our limits in shaping the land, in shaping others? What counts as good fruit? As good work? How can we recognise good husbandry? A good husbandman? How can we reconcile our individual experiences with universal truths? And, how can we attain understanding whilst preserving wholeness?

The purpose of this research, then, is to see if intuitive, poetical insights can help in the writing of a science of husbandry; a science which can depict nature's creative autonomy, free-will and connectedness. The whole of the universe can be found and understood in minute particulars. Holistic knowledge is achieved in the very act of its expression. In a culture of consumerist ideals, and fragmented knowledge captured in separate disciplines, the challenge is to represent the bonds which continue to be present. Such natural bonds are preserved in language. To this end, a single word can be a homing place, from which to explore relations and towards which to strive.

A poetic sensibility recognises the flux of nature between opposites. To enter into this flux involves the mixing of abstract reason with a bodily engagement with the world. For example, in Western European culture, there is a tendency to view domestic animals as commodities, even though concurrent scientific research from a Neo-Darwinian perspective shows our biological relatedness. In ancient writings on domesticated and wild animals, this complex relatedness is expressed poetically. The oldest known texts derived from early Indo-European language are the hymns of the Rig Veda, composed around 1,500-900 BCE. These poems give a remarkable picture of an interconnected worldview where animals and food are sacred. Knowledge (the meaning of the word Veda) is composed in poetry which raises unanswerable questions which puzzle and challenge. There are hymns devoted for example to butter, which was used in oblations to the gods and valued as the food of the gods and symbolises the perfected speech in the heart of the poet (O'Flaherty 2000, p.126).

The wave of honey arose out of the ocean; mingling with the stalk, it became the elixir of immortality that is the secret name of butter 'tongue of the gods', 'navel of immortality'...

The whole universe is set in your essence within the ocean, within the heart, in the life-span, let us win your honeyed wave that is brought to the face of the waters as they flow together.

(O'Flaherty 2000, p.126)

The quality of the ocean is vast, even overwhelming, yet is recognised in essence, perfected 'within the heart' and the human lifespan. Butter is the mediating symbol of such rich fertility, shorthand for the involvement of rain, soil, vegetation, animals, milk – in the same way that the clouds might be said to drop fatness, or the hills to clap their hands in a psalm. In this sense, then, butter was sacred, as a condensed expression of the universal processes of nature – synthesis and reduction. The Rig Veda are thought to be the sacred writings of Aryans (Iranians) from the Indus valley, who conquered the Dasa people native to India. Despite difficulties in translating from the Sanskrit, it is clear that these ancient people had the same concerns as we do, the same wish for knowledge, inspiration, long life and immortality. They had advanced weaponry and fighting skills compared with the local Dasas and used horses and chariots with spokes. There are tantalising mythological and etymological threads linking the Sanskrit world with classical Greece and Rome and with contemporary Europe – preserved in language of Indo-European origin. An example of the Rig Veda depiction of animals (which we can recognise in Virgil's poetry) is the way in which horses are portrayed, as both real and symbolically sacred. The following citations are from hymns dedicated to the sacrificial horse which is identified with the sun (the mane is the sun's rays) and with fire and with transportation to heaven as a race to be won.

When you whinnied for the first time, you were born coming from the ocean or from the celestial source, with the wings of an eagle and the forelegs of an antelope – that, Swift Runner, was your great and awesome birth.

Your body flies, Swift Runner, your spirit rushes like wind. Your mane, spread in many directions, flickers and jumps about in the forests.

(O'Flaherty 2000, p.87)

The poems are striking to a twenty-first century reader in the fluidity of the images – nothing is pinned down exactly. The sun may be a horse but it is also a bird and the sunrise is a herd of cattle coming to be milked. The horse is:

at least three things at once: a real material creature whose domestication enabled the Indo-Aryans to conquer the Indo-European world, a race horse that ran in profane and sacred contests and a precious sacrificial victim. In these hymns the horse – in all three of these aspects – is praised, killed and lamented.

(O'Flaherty 2000, p.84)

Qualities of one thing can be understood and expressed in terms of another. Understanding here is intuitive, questions are not necessarily resolved into logical, analytical answers. The horse motif, whilst standing for passion, also serves as reminder of intuitive connections and was particularly associated in Greek and Roman mythology with the sea. Animals in the past may have been viewed as symbols, as messengers from the spirit world, as totems or clan motifs, important in warfare. They were depicted as characters in fables or agents who delivered stories. Quite apart from historical interest or entertainment value, such depictions preserve important connections, showing a version of husbandry as a vast, encompassing oneness, grounded by the practical striving to produce food, to tend animals, and even 'to win' the race.

### **1.3 Ancient Greek and Roman Writing on Agriculture**

Works and Days composed by the ancient Greek poet, Hesiod of Boeotia, (c. 700 BCE) might be described as one of the earliest examples of writing on agricultural methods. However, it is as much literature which aims to resolve human experience by posing a universal 'order of being', as an explanation for the way things are. We are introduced to two kinds of Strife, one who fosters evil war and battle and the other who 'sits above' and is kinder and 'stirs even the shiftless to toil' (Evelyn-White 1964, p.3). Hesiod was not emulating the epic tradition of the Iliad and the Odyssey of Homer; rather he captured popular,

indigenous proverbs, maxims, and weather-lore of the Boetian people. *Works and Days* is not, however, a technical instruction on farming (nor on seafaring, a subject also broached) rather its aim is moral: 'lay up these things in your heart and do not let that Strife who delights in mischief hold your heart back from work'.

Good management, *efthimosini*, is the working towards the attainment of happiness and prosperity, the best way to live in an unpredictable world. On the subject of ploughing, for example, Hesiod's advice is:

Let a slave follow a little behind with a mattock and make trouble for the birds by hiding seed; for good management is the best for mortal men as bad management is the worst. In this way your corn ears will bow to the ground with fullness if the Olympian himself gives a good result at the last, and you will sweep the cobwebs from your bins and you will be glad, I ween, as you take of your garnered substance.

(Hesiod 1964, p.37 lines 458-464)

Along with practical advice, Hesiod gives the mythological explanation of that great mystery, 'the fall of man into a burdened existence'. Prometheus has stolen fire from the gods and, as part of his punishment, Zeus 'fashions a sweet, lovely maiden-shape' from clay. She is Pandora, the 'All-endowed': each of the gods gives her a gift 'a plague to men who eat bread'. Pandora releases these 'gifts' which cause all sorrow and mischief which man experiences (Evelyn-White 1964, p.7).

The motif of shaping and decorating a woman is also used in later Roman writing to express a complex body of knowledge and experience. Columella, writing around 60 CE, personifies *Agricultura* as female – she is 'own sister to wisdom' (Columella 1960, p.5). The agricultural writers are the husbandmen who tend and cherish and teach her. In an historical overview of the development of *Agricultura*, Columella lists the early Greek philosophers who have contributed to her transformation, then:

And that we may endow Agriculture at last with Roman citizenship (for it has belonged thus far to writers of the Greek race), let us now recall that



illustrious Marcus Cato the Censor, who first taught her to speak in Latin; after him the two Sacernas, father and son, who continued her education with greater care; then Tremelius Scrofa, who gave her eloquence, and Marcus Terentius, who added refinement; and presently Vergil, who gave her the power of song as well.

1:i:12 (Columella 1960, p.35)

The poem *Husbanding Husbandry* draws on this idea. The lineation of the poem is significant, where the lines break into three parts, the middle column contains the phrases which constitute or encourage third places, for example 'a being with', 'carefully', 'being bound', 'articulate'. The word 'bio-reaction' falls, rather ironically, here also, since the coinage of this word in biotechnology implies a mechanical, utilitarian attitude, rather than one of equality between human and animal.

I revisit the idea that husbandry can be taught to 'sing' in the poem *Valentine*, where Dolly is said to be 'an open vowel' and in chapter 6, which focuses on Virgil's *Georgics*. To explain the metaphor briefly here, it suggests that Virgil's version of husbandry was fluid and poetic, harmonious in its connection of seemingly separate elements. Of course Virgil suggested the metaphor in his frequent use of the word *laetas* – to sing, be joyful, to be fertile, to praise – (see *Georgics* 1:1-5 below). *Valentine* was also written with the perspective that Dolly arose out of the third place meeting between the idea and the medium. The poem is titled *Valentine* since Dolly was given a lethal injection on Valentine's Day in 2003, because she was suffering a progressive lung infection.

The Romans left a rich resource of literature on agriculture, which was made available to later Europeans with the advent of the printing press. The works of Cato, Varro, Columella and Palladius (writing c. 160 BCE, 120 BCE, 60 CE and 350 CE respectively) were collectively known as *Scriptores rei rusticae* and became the second printed book on agriculture, in Venice in 1472.

Husbandry, crucially, was presented, and represented with each subsequent translation, as an ethically responsible activity involving not just measurable quantities but qualities, such as the 'good' of husbandry, and indeed the

qualities of a 'good' man. Cicero (writing around 46-44 BCE) believed that the knowledge of goodness comes from nature herself:

You ask what my opinion is? That those good, brave, just and temperate men of whom we have heard as having lived in our state, of whom we have ourselves seen, who under the guidance of Nature herself, without the aid of any learning, did many glorious deeds, that these men were better educated by nature than they could possibly have been by philosophy had they accepted any other system of philosophy than the one that counts Moral Worth the only good and Moral Baseness the only evil.

III:iii (Cicero 1914, p.227)

Or as Cato, put it, writing on agriculture around 160 BCE:

And when they would praise a worthy man their praise took this form: 'good husbandman', 'good farmer'; one so praised was thought to have received the highest commendation.

(Cato 1934, p.3)

Cato's phrase serves as an introduction to Virgil, the patriarchal Good Husbandman of the pre-Christian Roman Empire, who gave *Agricultura* the power of song.

The first lines of Virgil's *Georgics* encapsulate the whole remit of the work:

What makes joyful fields? Under which stars to turn  
the earth, Maecenas, how to marry elms and vines,  
what are the worries with cattle, how to harness  
a cultivated herd, what trials make bees thrive?  
From here I'll start to sing.

1:1-5

‘What makes the cornfield smile?’ is Dryden’s seventeenth-century translation of the opening phrase. *Laetas*: the word signifies happiness, fertility and dung. This provides another striking example (and there are many in the original Latin) where the word implies a ‘whole energy system’ (Kenner 1991, p.171). The process of farming is linked to the stars, the seasons, even a destiny. The earth does indeed turn in the right place, *vertere*, to start line 2, perhaps to subtly invoke Vertumnus, the Roman god of the changing year. The following next line break shows the correct timing of grafting the vine to the elm.

In Virgil the activity of nature is expressed in a way that relates to human affairs: the elm and the vine are ‘wed’ (*adiungere...conveniat* gives the association of husband and wife). *Quae cura boum*, carefully placed in the centre of line 3, is precisely ambiguous. We can recognise the same tensions, the same striving for economy, thrift (*parco*) and good management that was present in Hesiod. Virgil writes *quanta experienta* – how much experience? He hints – how much depends on *Parca*, the goddess of fate? Full control of nature is not possible.

The movement in this small section, as in the full *Georgics* sequence, is cyclical, like a carousel. A *cultor* is a husbandman, a planter, an occupier of a place, a friend, supporter, a worshipper. *Colere* comes from the Indo-European base: *quel-* or *quo-*, to turn around. The root also gave rise to wheel and worship. *Canthus* – the rim of a wheel – close to *cano* – to sing, as Virgil sings, as frogs croak and as the cock crows. ‘To sing’ is also to foretell (Bloom 1997). There are many translations of Virgil’s *Georgics* into English, each with certain nuances and contemporary flavours. For the purposes of this thesis, I have retranslated selected quotations, particularly trying to use the same multifaceted approach to single words, trying to reflect something of the bonds of origin which exist in the Latin but have not necessarily survived in English.

Virgil does not represent a historical ‘golden age’. Agriculture, in first century BCE Italy, was generally in a state of crisis, and the country was deeply damaged by civil war and corruption among politicians. Large-scale farming activities were orchestrated by external social and political forces which were detached from the rural situation; everyday common sense wisdom was suppressed or simply excluded from official rhetoric. The *Georgics* are politically optimistic, on the surface at least, in anticipation of the forthcoming emperor, Augustus. The *Georgics*, composed in 29 BCE, were much admired,

translated and emulated from the mid-sixteenth century in England. Virgil has been described as a poet for nationalists and for exiles. He was the poet, for example, for Dryden in 1690, in whose translation a field to be ploughed became a battlefield, in a Catholic Jacobean version (1:231) (Burrow 1997). He is the poet of *viridis umbra*, the green space of harmony and flux between humans and nature; he works within the 'continually changing conceptual centre' of human experience (Batstone 1997).

Virgil provides one of the main questions for my thesis – what does it mean to give *Agricultura* the power of song? In what way can poetry achieve the perception of wholes? How is the marriage of the vine and the elm, the care of cattle, the correct timing of events achieved in the writing itself? There are deep connections to be made between poetry and 'husbandry' as a metaphor for the natural creative process. For example *verso* means both to turn verses in the mind and to plough the land. We can also return to the idea of husbandry as a binding place or the third place between extremes. Poetry provides also such a place, because a poem arises from juxtaposition: 'The process of the poem is that of a unifying idea being driven through the productive resistance of the form proposed by the marriage of two previously estranged or unrelated things' (Paterson 2003). It is, to extend the metaphor, this which gives rise to creative 'fruit'. The question to which I will return is this: can a poetic understanding of the world shape the writing of agricultural science and science in general? Or to refine the question, can poetry help towards husbandry? In this thesis I am juxtaposing the idea of husbandry, as a grounded place of one-ness, with that of poetry. The purpose of this work is to consider the applications in science, which might help to foster a more meaningful engagement with language itself. I suggest that a holistic relationship is best known by poetic intuition and thus can be expressed uniquely in art, particularly poetry.

#### **1.4 Husbandry and Modern Science**

Just as myths have always attempted to account for the human condition of pleasure and suffering, so ethical and religious ideals have it would seem, always shaped notions of 'good husbandry'. The activities and abstract notions

of husbandry have influenced not just agriculture but the evolution of modern science, particularly in sixteenth-century England, and through to the present. To the extent that science is a natural philosophy, the work continues in depicting an overall understanding of the nature of things. To the extent that science is a human activity, the work continues in striving for continuity of the human species and also to define abstract objective or 'good', truths that will persist despite human failings.

In Chapter 4, we can follow the association between scientific principles and the development of industrialized agriculture in England and Europe. The driving moral forces, intellectual justification and work ethic from our recent history have continued to drive agricultural productivity and applied science. Thus husbandry, intertwined with the modern science of nature, became almost synonymous with the words: productivity, improvement, development, progress and reason. Officially, 'Good husbandry' lost something of its holistic perspective, that of a 'commonweal' and of social bonds. In Chapter 4, I have chosen to focus on Francis Bacon, to epitomise the puritan thrust that reshaped both husbandry and science. In his essays he frequently employs the rhetorical idea that nature's truths and power can be accessed by humans and put to human use and profit. Fruitfulness, as a measure of (ethical) worth, is one of his most common metaphors and the focus therefore becomes personal innovation and profitability.

In post-modern Western European societies, more often than not, the activities of production and consumption are dissociated. Western philosophy and sciences have, it is often said, become overbalanced in the direction of functional reductionism. Scientific principles have constituted a body of knowledge, a corpus. If we allow ourselves to personify these principles, to imagine a figure who stands for a Western European, modern version of human experience of the world, he is likely to be a male figure. He is fastidious, prudent; he seeks objective knowledge and clear truths. He operates on the basis of hypotheses which are set and either proven or disproven; variables have been defined and numbered; events have been explained in terms of cause and effect. The poet Ted Hughes would recognise him as an Adonis-type character: 'a Puritan of the reformation, an idealist of rational control' (Hughes 1992, p.513). He has always existed, expressed in the most ancient of myths. But he is also clearly to be recognised in the sort of rhetoric used by

writers of the enlightenment, such as Francis Bacon. We could also refer to our personified character as the 'Good Husbandman'. He is an attempt to define a rational ethic, in keeping with abstract ideals, to reach, by induction, an objective, generally applicable truth, held apart from the knower. His activities are an attempt to counteract the sorrow and mischief caused by Hesiod's Pandora as he seeks control and order. He can be contrasted with the feminine personification that is Columella's *Agricultura* (although we notice that *Agricultura* was a Galatea or 'My Fair Lady' manikin who needed to be taught various cultural skills). As will be argued in Chapter 6, personifications such as the one above, whilst utterly anthropomorphic, are useful as memory aids, reminders, motifs which can be set aside or allowed to interact with other personifications of other ways of knowing. Such personifications are a common aspect of ancient poetic wisdom.

To express and to promote knowledge which is based on rational, logical concepts, is easier if language behaves similarly in ways which are rational, logical and unambiguous. If we look at the style of scientific research writing, for example, certain rules have developed. The passive, rather than the active voice, is used to stress that the findings hold true generally and that they are not the idiosyncratic results of one individual or situation. Agency is not directly acknowledged: neither that of the researcher, nor of the subject being researched. Subjective descriptions are used with caution. Numerically expressed objective measurements are given priority. In the biological sciences, overt anthropomorphism is avoided in descriptions of non-human organisms. These are represented in terms of their behavioural responses, in a cause-and-effect mode, which can be linked back to Baconian rhetoric. Yet, as has been pointed out, in relation to contemporary science: 'to speak is never neutral' (Irigaray 2002). Luce Irigaray draws a comparison between a mechanical, reductionist, objective remit and the claim that language is objective, giving universal truth. These ideologies, she argues, are death to the subject.

Language divested of all pathos, absolutely detached is transmitted by someone to someone else, who has no acknowledged origin or source either. This language is supposedly a translator, or a perfect translation, an adequate copy of the universe, and of the subject as well. The

formula, its mechanics and its machinery are supposedly enough. The subject has become a machine with no becoming – finished.

(Irigaray 2002)

It is probably an illusion to think that disconnected knowledge – dissociated from an ongoing experience of dwelling in nature – is productive. It is damaging to humans and the environment – of which we are part. There are deep connections to be made between poetry and husbandry as a natural creative process. In the writing of poetry and in learning from those who work closely with animals, it is possible to explore what it is to be alive:

that property of dynamic order that is elusive but insistent : a kind of presence that speaks to us at a deeply intuitive level since we share the condition.

(Goodwin 1994b)

The need to perceive wholes, and the limits of reductionism, are current concerns in science, and constantly addressed in poetry. The concept of husbandry, as a third, connecting place, between art and science, could be used to give redress. This is the purpose of my thesis. Because the mysteries of the nature of things, the human-animal relationship and the human-nature relationship, form the challenges of husbandry there is a wealth of poetry on the subject. However, I have chosen to focus particularly on two Latin poets. Virgil, I have already introduced. My second chosen poet is Lucretius, who in his work of natural philosophy, *de rerum natura*, achieved a vision which is scientific, atomistic and materialist but also one of connectedness. Lucretius worked with language to exercise the human senses, imagination, reason and vision. He continually asserted that action, free-will and creative autonomy are attributes of nature.

Lucretius in his poem is constantly seeking rational, natural truths, but he achieves this, not by suppressing other aspects of life, but by setting this reasoned knowledge in the widest possible context. This is achieved by a continual dance of light and movement, where precise observations and matters of life and death, happiness and wisdom are united by the theory of moving

atoms. It is crucial to Lucretius that in his control of the writing process he also affords freedom and autonomy right through the scale of atoms and humans. Then he can advise on the best way to live, 'keeping the bonds of peace established for the common good' and thus achieving peace of mind.

If he would steer his life in truth,  
then wealth showers those who show forbearance,  
an even spirit. In such a calm crossing, nothing is lost.

5:1115-1117

In these Latin lines there is an underlying suggestion of sailing through calm water – *guberno* – to steer; *aequo* to make level or equilibrium (related to *aequor*, a calm expanse of water and *aequum*, a level footing). *Divitiae grandes* (increasing abundance: note *grandis* to swell and *grando* a hailstorm) is balanced with *penuria* (scarcity) and *parvi* (not enough, also encore!). Fulfilment is achieved by being moderate, careful (*parce*) and the guiding principle of *ratione*. Everything is held in the breath of the two words: *aequo animo*: level breath, even spirit, quiet mind.

These lines might be taken as another definition of a good husbandman. He does not appeal to supernatural powers, nor make sacrifices to the gods to effect safe passage for his fleet of ships. Rather, with reason in his mind, he sails through calm waters. The rationality of Lucretius, as he interprets the Epicurean vision of nature, shows a way of knowing that involves respecting the universe for what it is, 'but lived in none the less with joy' (Fowler 2002, p.451).

In Chapter 2, we will continue within the concept of husbandry, looking in particular at the way in which this relationship between humans and domesticated animals has evolved in Western European culture. I continue to explore the bonding of poetic insight and husbandry and suggest that this can help towards the shaping of a third place, which can take account of wholes and parts, relations and qualities.



## **Chapter 2: Animal Husbandry as Combined Striving**

- 2.1 Domestication and Culture
- 2.2 Consumption of Animals
- 2.3 Animals as Subject
- 2.4 A Discipline of Relations to Make a Third Place

This chapter focuses on the human-domesticated animal relationship and presents this as, at best, a striving together to mutual benefit. The mass and detached consumption of animals and their products can stray towards abuse rather than respectful use of a natural resource. Ironically, the scientific viewpoint of continuity between animal species is not borne by conventional scientific writing, where for the most part animals tend to be depicted as fragmented sets of mechanistic behaviours, rather than as whole, active agencies.

The poems of this chapter came from a consideration of the human-animal connection as it is expressed in scientific research. Sonnet of the Noctuid Moth and Imagining a Sunbird Drinking Lilac were derived from science papers, (Fullard 2003, McWhorter et al. 2003) but drawing attention to those aspects which tend to be hidden or which cannot be known intellectually. The abstract form the paper precedes the poems in each case. These poems along with Entity and Comparison of a Black Labrador with A Sikka Deer Skull can be read as fables which comment on the logic behind science, by setting it to one side. Town with Meat Factory and Wordpigs are based on fieldwork visits.

Poems:

SONNET OF THE NOCTUID MOTH

IMAGINING A PALESTINIAN SUNBIRD DRINKING LILAC

ENTITY

COMPARISON OF A BLACK LABRADOR WITH A SIKKA DEER SKULL

TOWN WITH MEAT FACTORY

WORDPIGS

*Note: pages with poems have been removed for reasons of copyright.*

## 2.1 Domestication and Culture

Since Neolithic times, and probably before, humans have depended on certain animal species for meat, milk, natural fibres and with the invention of the plough as early as 6,000 BCE, for cultivation and muscle power. Domestication, whereby animals were purposefully enclosed and bred, is estimated to have occurred in around 10,000 BCE, although an association between humans and dogs is evidenced before then. Goats were apparently the first species to be domesticated. They were used to provide food in Mesopotamia in the Middle East, in the area known as the Fertile Crescent, which spans the Nile valley, north along the coast of Palestine and east into Asia. Table 2.1 shows the estimated times of agricultural and food developments (Hatziminaoglou and Boyazoglu 2004). Archaeological and recent evidence from studies of genetic markers, suggests that there were a number of 'domestication events' in diverse locations in the Middle East and South West Asia; East Asia, and South America (Bruford *et al.* 2003). Diamond details five 'centres of domestication' of indigenous crops and animals: South West Asia (the Fertile Crescent), China, Mesoamerica (Central America and Mexico), The Andes of South America and the eastern United States (Diamond 1997, p.99). Hunter-gathers in adjacent areas would gradually have been replaced as food producers, with their range of evolutionary advantages, invaded.

Historical and ethnographic studies show that in early civilisations where animals were domesticated, they were not suddenly and simply regarded as commodities. Complex connections existed, which today we would describe as having sociological or spiritual significance. Any 'domestication event' is inextricably bound with a social context of human-human relations and human-environment relations. Animals may be essential in bonding rituals of gift and exchange, festivals such as weddings and seasonal celebrations and in religious sacraments, where animals and deities are often closely linked, as shown in prehistoric artefacts and depictions and writings involving and depicting animals. The ancient Sumerians of Mesopotamia, the Babylonians and the Ancient Egyptians, for example, worshipped deities associated with the goat and it is represented as a holy entity in their myths, legends and artefacts. The religious and symbolic associations between cattle, gods and goddesses in ancient civilisations of Anatolia provide another example (as evidenced from the

archaeological site Çatalhöyük in Turkey). Ancient writings also give insight into an interconnected world view, where animals have a symbolic function, as do the gods. They provide narrative explanations for example for life-as-it-occurs, environmental patterns and events. John Berger writes: animals ‘offered explanations, or more precisely, lent their name or character to a quality, which like all qualities was, in its essence, mysterious’ (Berger 1997, p.262).

Table 2.1 Timeline of Ancient Civilisations

Time, B.C.E.	Event	Region
11000	First known evidence of domesticated dog	Middle East
8000	Earliest directly dated evidence of goat domestication	Ganj Darech, Kermanshah Valley, Iran
7800	First evidence of wheat growing	Tell Aswad, Mesopotamia
7000	Evidence of domesticated scimitar horned goat	Jericho, Jordan
6000	Villages with domesticated sheep and goats	Jarmo, Asia minor
4500	Earliest evidence of maize cultivation	Mesoamerica
4000	Climate shift with Sahara becoming a desert Cheese making equipment used by Lake Dwellers	North Africa Switzerland
3700	Domesticated goat with twisted horns	Anau, Turkestan
3300	First writing	Sumer, Mesopotamia
3000	Domesticated goats with scimitar horns appear on vase fragments, Sumerian frieze shows milking operation and curdling of milk	Baghdad, Iraq
2500	Domesticated goats with screw type horns	Nippur, Mesopotamia
2500	Cattle and goats raised for milk and meat	Mesopotamia
2500	Domesticated goats and sheep used with cattle and pigs by the barley cultivators of the Neolithic	Greece, Hungary
2300	Domesticated cork screw-horned goats on sepulchral tablets	Sebek, Egypt
2000	Domesticated goats with long hair like Angoras and with twisted horns shown on plaques	Nippur, Mesopotamia, Beni Hassan, Egypt
1800	Baskets used for cheese making	England before Romans
1200	Homer describes goats and sheep, cheese making	Greece
700	Domesticated goats on silver coins	Greek islands

(Hatziminaoglou and Boyazoglu 2004)

Just as the evolution of domesticated animals has been profoundly influenced by humans, so these relations have enabled humans and human cultures to develop in certain ways. Animals as symbiotic partners have provided transportation: dogs to pull sleds at the polar extremes, caravans of camels and oxen in desert regions, reindeer in Northern Europe and America. To the extent that human population numbers depend on nutrition, animals have facilitated urbanisation of human cultures. Jared Diamond has written extensively on the evolutionary advantages accrued by herders and farmers, in comparison with hunter-gathering societies. Not only have domesticated animals provided milk, meat, fertilizer and plough-power, also a settled existence with surplus food allows for stratification of society, higher birth rates, development of literacy, and the production of metal tools and weapons. Therefore, a history of the past 13,000 years of unequal conflicts between nations can be written in terms of the active influence of the environment on societies (Diamond 1997). Fourteen species of large herbivorous mammals were domesticated in ancient times (domestication defined as bred in captivity and therefore modified towards usefulness to humans). The 'major five', that is, the most widespread, are sheep, goat, cow, pig, horse. A further 'minor nine' are Arabian camel, bactrian (two-humped camel), llama /alpaca, donkey, reindeer, water buffalo, yak, bali cattle and mithan. Of a possible 148 mammalian candidates for domestication, the majority came originally from Eurasia. The proportions of successful domestication of possible candidates is estimated by Diamond: 13 out of 72 possibilities in Eurasia, 0 out of 51 in Sub-Saharan Africa, 1 out of 24 in the Americas and 0 out of 1 in Australia). He explains this in terms of the characteristics of the animal species themselves: their required diet and growth rates, ability to survive and to breed under captivity, temperament – tameness and calmness – and social structure of the herd. As Diamond is aware, this fortunate inheritance of the Eurasian people conferred on them immense material and cultural wealth (Diamond 1997).

That cattle have been measures of wealth is rooted in language, for example, capital, cattle and chattel are related (Skeat 1910). Columella noted the similarity between the Latin words for money (*pecunia*) and private property (*peculium*) and cattle (*pecus*) and concludes that there is a fundamental

association between wealth and the ownership of grazing cattle (Forster 1954, p.119).

Without the use of animals, it has been speculated, human affairs would have remained localised – patterns of warfare, spread of religions such as monotheism and cross-fertilisation of cultures would not have happened, large regions of the planet would still be unoccupied (Caras 1996). Therefore, domestication of animals is a clear example of the connectedness of natural processes, of a common striving which has been achieved by symbiotic living. It is to some extent artificial to discuss domestication as a single or clear-cut event. Land and animal husbandry, rather than being associated only with settled peoples, is also practised in nomadic and hunter-gatherer societies. In New Guinea, for example, modern nomads clear patches of jungle on which to plant bananas and papayas and only return periodically to check and weed, and finally to harvest (Diamond 1997, p.106).

It has been pointed out that human narratives of domestication tell us as much about how the narrators view their own humanity and animality, as they do about relations with non-human animals (Wilkie 2002, Ingold 2000, p.61). The shaping of animal husbandry might be understood as a shaping of humanity.

Crucial also in this shaping is the use of language to delineate categories. For example, the word 'animal', which I use throughout this thesis for simplicity, to refer to 'non-human animals', is a case in point. There is an implication that humans are not animals. Even the origin of the word animal from *anima* implies a spiritual and physical connection – all beings sharing the same 'breath of life'. The human-animal bond is of interest philosophically because animals are our closest neighbours in nature. Even this casual use of the word 'nature' might be taken to suggest that nature is confined in such a way that humans are separate. However, there is a sense in which nature had to be conceived as a discrete entity before humans would think of intervening or representing 'her' as a personified entity. 'It is precisely this limitation and subordination of nature which sets her free for her triumphant poetical career' (Lewis 1963, p.36).

Thinking along these lines, agriculture is a defining of nature, and the shaping of *Agricoltura* is also the shaping of *Natura*. It becomes clear, as expressed in the widest meaning of *cultura*, that the delineation of nature is a concern of not just

agriculture, but other cultural activities, including literature. Language unites humans with others but it is also a distinguishing feature between humans and other animals. The 'nature' which is constituted by language reflects reality only to a certain extent, it 'may or may not correspond to the natural world that exists independently of human beings' (Kovel 1997).

We have a tendency to see faces in the clouds, to imagine an angry, thunderous god, a smiling sun. It could be argued that our depiction of nature is anthropomorphic from the very outset because it is based on human faculties, symbols and language. Even modern science could be viewed as anthropomorphic since it is expressed in human terms, despite operating from a platform of 'objective detachment'. Ancient mythologies, however, express a numinous, connected and mysterious understanding of the earth.

It has been argued that the 'rubric of domestication' assumes certain philosophical assumptions: that humans are transcendent over nature and ultimately have the power and right to intervene (Ingold 1987). Some would associate this attitude with the Judeo-Christian tradition. However, that tradition stresses the importance of ethical stewardship, in an ideal of good husbandry which acknowledges that the earth does not belong to humans, it is only held in trust (Atfield 2000, Katz 2000). The Judeo-Christian tradition was taken forward, however, into a modern technological science, which in the hands of some writers, and because of certain sixteenth/seventeenth-century events, became gradually more likely to stress innovation, profit and control over nature (see Chapter 4). It would also be true to say that the concept of ownership and the authority to intervene in nature is probably as old as the settling of humans in fixed places and it is reflected in etymologies and systems of 'natural law' (Vico 1968, p.123).

As technology, urbanisation, and physical detachment from the natural world increases, so may traditional 'natural' knowledge be lost. This was a concern voiced in sixteenth-century England and in first-century Italy and is not a new phenomenon. However, natural knowledge is never truly lost but can be directly discovered, by people who work daily with animals and on the land. Such people are in a position to help to rewrite 'the narrative of domestication' and indeed a more naturalistic science (Ingold 1987, p.76). This source of wisdom provides support for a thesis which examines what contemporary

animal husbandry might mean in practice, not only intellectually and economically but from the point of view of intuitive tacit connection with nature.

In *de rerum natura*, when Lucretius writes of domestication, he is presenting survival of domesticated species in terms of a combined striving. Lucretius uses the verb *producere*: to beat out or forge; to hammer into shape, as he describes the trials and errors of nature in producing successful animals. *Producere* is a verb which serves to connect with human activities, for example, Virgil's: *durum prodcudit arator /uomeris obtunsi dentem*, 'ploughmen beat sharp the blunted ploughshare point' (1:261) (Wilkinson 1982, p.65). The quotation also illustrates the association of certain qualities with certain species, in an active, metaphorical sense.

All sorts of creatures must have become extinct  
in the meantime, not able to mate or to give birth.  
All those you see grazing contentedly in today's light  
have been defended since the start by their own natures;  
whether cunning or brave or ultimately agile.  
Many others proved noble and useful  
and commended themselves to our protection,  
traditionally under human keeping.  
Lions, meantime, have been ferociously saved by courage,  
the fox by his cunning and the stag by his fleeting escapes.  
The lightly-sleeping, faithful hearted dog,  
all types of draught animals,  
wool-bearing sheep and horned cattle,  
again fall under our guardianship, Memmius.  
They eagerly traded the wild for peace,  
following where there was a secure home,  
and lots of fodder in exchange for work,  
timidly pleading their small usefulness.

5:855-870

The idea of striving to be, to exist, was expressed in the word *conatus*, used by the seventeenth-century philosopher-scientist Spinoza. It is a Latin word,



meaning to strive, impulse, effort, inclination. Spinoza said that there is no distinction between a thing itself and its striving to preserve its own being, to 'stay in being'. The expressing and the achieving are one and the same in the form of the organism. 'Good' for any organism can be understood in terms of *conatus* as a relative value, something which contributes towards being (and 'Bad', conversely, as something which hinders being). This combined striving provides another understanding of husbandry, each entity in the husbandry relationship unfolding towards a relatively defined 'Good'. Vico also used the term *conatus*, arguing that it must have been one of the earliest bonds which arose in primitive societies, a striving together, and was the origin of marriage (and being associated with the first bond, which Vico explains must have been a moral 'god-fearing' attitude amongst the people) (Vico 1968, p.171). Either way, whether as the origin of marriage or of domestication of animals, striving 'to be' seems to be a fundamental definition of being alive, and for many different organisms it involves a combined effort (see Chapter 7.2). This was the idea behind the poem *Entity*, where the organism in question eventually thinks the better of engaging with the human!

## 2.2 Consumption of Animals

In contemporary 'consumerist' societies, the relationship between humans and domesticated animals has changed dramatically within the past few generations. Scientific and technological developments, and social and political attitudes, have changed both agriculture and food production methods. Generally speaking, many twenty-first-century consumers are detached from domesticated animals, despite the fact that vast quantities of animal-derived products are produced and consumed. Industrialised, 'factory farming' methods, tend to prioritise short-term economic productivity, and lead to widespread rationalisation justified on economic, scientific and political grounds. These changes are expected to continue and to expand world-wide, in an ongoing 'livestock revolution', involving a dietary shift from grain-based nutrition towards consumption of meat and dairy produce (Delgado 1999). Current and emerging technologies focus on gaining and maintaining control over the processes involved in animal production, as well as promising new ways of

consumption. There is potential, for example, to integrate food production and pharmaceutical technologies involving transgenic domestic animals. Such biotechnological developments are described as essential in terms of improving efficiency of animal breeding, of enhancing the quality and quantity of animal products and of preserving genetic resources and diversity (Smidt and Neiman 1999, Neethling 1994). In this applied biology, there is at times a sharp contrast between a detached, objective research rhetoric and claims of 'powerful opportunities', 'enormous benefits', 'the hen has long held promise as a low cost, high yield bioreactor' and so on (Campbell et al. 1996, Ivarie 2003).

There have, however, been issues of consumer trust in the science and technologies currently or potentially involved (Early 2002, Katz 2001, Thompson 1997). There is a growing acknowledgement that the cost of 'cheap food' is being borne elsewhere or in non-economic terms – in relation to consumer health, farmers' autonomy, rural infrastructure, and in terms of animal welfare, soil fertility and other aspects of the environment. There is an ongoing need for the responsible, ethical evaluation of conventional animal production methods, not least with a view to making informed decisions about future developments (Thompson 1997, Christiansen and Sandoe 2000). There are calls for a deeper, thoughtful evaluation of the attitudes which underpin contemporary technology (Matthews 1991, Plumwood 2002, Heaf and Wirtz 2002). There are, ongoing attempts to incorporate considerations of animal welfare and to address questions relating to the ethics involved in the commodification of animals. Yet, commonly within the contemporary animal husbandry relationship, animals are viewed as property or resource, with humans as the dominant owners. The implications of this power relationship have been articulated by writers from diverse backgrounds of environmental philosophy, eco-feminism, anthropology, sociology and history (Adams 1996, Fiddes 1991, Franklin 1997, Salisbury 1994, Patterson 2002, Smith 2002). There is an urgent need to find ways of using the earth's resources while at the same time promoting an attitude of respect and reverence. It is often said that the way in which animals are treated by human beings gives significant insight into the values which humans have adopted towards 'ethical Others' in general, whether human or non-human (Smith 2002, Plumwood 2002, Patterson 2002). When the first animal-cloning experimental results were published, for example, John Hapgood, the former Archbishop of York expressed concern:

To assimilate the world of living things into the mechanical model, and to manipulate it to fit the needs of mechanised production, might on a superficial level seem to promise greater human freedom and prosperity. On the contrary, the more we treat animal life as being manipulable for human convenience, the greater the temptation to think of human life in similar terms.

(Franklin 1997)

However, it is also the case that professional prose which is used to report such research work does not explore or express aspects of the real human-animal relationships which exist, or have existed, as part of the work. As already mentioned, where humans work closely with nature, intuitive, qualitative and tacit knowledge is likely to grow and develop. Such wisdom is not necessarily represented in technical writing. Even those who routinely produce animals for food, as 'sentient commodities', have a more complex, ambiguous and dynamic relationship with these animals than is conventionally acknowledged, involving, for example, emotional attachment and detachment, compassionate concern and instrumental impersonality (Wilkie 2002, Wilkie 2005).

The contemporary animal husbandry relationship echoes to some extent the science-based relationship between an 'objective', detached researcher and the passive 'subject' of study. In general, mainstream ideals of rational, scientific knowledge have been underpinned by assumptions that the physical universe consists of separate, compositional units, which interact in a mechanical way to form larger units, which ultimately form things – objects, substances, living organisms, environments. This mechanical worldview also coincides with developments towards individualism and competitiveness in society generally and increasing detachment from nature as people move to urban environments. Under the terms of a fragmented worldview, the environment and living things tend to be treated as means to ends, as resources to be used for maximum, short-term, financial benefit.

Over the past century, questions regarding the conventional philosophy of science have been prompted in part by the pluralism of post-modernity and by the development of new discourses such as environmental philosophy, feminist science, social ecology and theoretical linguistics. Science is a human activity,

and some would argue, is bound to involve values and to be dependent, at least to some extent, on social, political and environmental contexts. There is a growing acknowledgement, both within and outside the discipline of science, that boundary work can dissolve barriers between the 'privileged truth claims of science and other knowledges' (Dickens 2001, Gieryn 1999, Rose 1997). There is a need for dialogue to clarify what is meant by 'science' and to reduce 'scientism', a naive view that science can solve all complex problems. The search for holism is not only a religious or superstitious quest, but it is an essential aspect of human enquiry.

Reductionist attitudes are damaging to the environment and to relationships between humans and others. It is necessary to seek the balance of reconnection, within science itself. This is why suggestions towards a 'science of wholes', (Holdrege 1988, Matthews 1991, Bortoft 1996) a 'science of qualities' (Goodwin 1994b), or a science of relations' (Serres 2003), are important, to complement twenty-first-century theoretical realisations about the physical world. Otherwise and, indeed, according to some commentators, traditional science is viewed as a vehicle for the devaluation of nature and living organisms. The representation of organisms is not just of interest in biology, it is biology (Polanyi 1958, Grene 1969). To depict an organism as a whole entity with intrinsic value, rather than one whose worth depends only on human use, is a task worth pursuing. In this thesis, the phrase 'a science of husbandry' may be understood as a contribution towards a science of whole/qualities/relations. It ties in with both the overt subject matter of the thesis but also the deeper insight that husbandry is an example of a third place which unites. The human-animal relationship as one of 'being together', that is sharing certain aspects of life, such as *conatus* as mentioned in Section 2.1. Further it has been recognised that a science of wholes/qualities/relations, is not purely a science in the way that the science is currently understood, that it must also be an art. Husbandry has always been recognised as both art and science: a third place, reconciling the two disciplines.

### 2.3 Animals as Subject

In the prose used for biological science, animals are constituted as physical objects. To some extent this is ingrained in the English language: an animal is commonly referred to as 'it' or as a living 'thing', suggesting that it is an object. Interestingly there are alternatives in other cultures – where animals may be viewed as messengers or storytellers, or named as verbs or riddles rather than taxonomic nouns (Ingold 2003). Relevant here are the poems *Entity*, where the organism is not identified, and *Imagining a Palestinian Sunbird Drinking Lilac*. In the latter, although the original trigger was a research paper on osmosis in Palestinian sunbirds, (McWhorter *et al.* 2003), I was playing with the idea of animal as fluid verb, rather than static noun – hence the continuous present tenses 'imagining', 'drinking', 'coming' and the reciprocal actions of conducting and exchanging. There is also a hint of the assimilation metaphor which links the acquisition of knowledge with the verb 'to drink in'. The sun-drop links symbolically with the drops of rainfall of other poems. *Sonnet of the Noctuid Moth* was written to draw attention to the absence of the moth itself from research writing on the hearing of moths (Fullard 2003). The research paper presented beautifully poetic phrases, some of which are used in the poem, but the poem reminds of the reciprocal necessity of 'listening' to the moth. The involvement of all of the senses in the sciences will be revisited in Chapter 7.

In Neo-Darwinian science the organism is envisioned as a set of biochemicals, mechanisms, reactions and behaviours, rather than in a state of wholeness. The aim is to link the parts together by association or causation. It could be said that this sort of intellectual linking, of parts, functions on the basis of definitions, measurements, selection and presentation of data and results. This raises ongoing questions on the benefits and limitations of scientific reductionism, the extent to which science is value-free and the rhetoric of science discourse. I will return to these points in Chapter 3. There are many philosophers and writers who consider these issues (Lacey 1999, Gross 1996, Gledhill 2000, Harding 1991, Gieryn 1999).

In natural human language, the central position of agency, the subject of the sentence, is normally given to the speaker or to a fellow creature. In English, for example, 'I ran across the lawn', gives me, the speaker, agency. 'I spilt the

milk' acknowledges my responsibility for my actions. This can be compared with the passive construction: 'the lawn was run across', 'the milk was spilt'. Sentences in scientific writing are constructed in the passive, rather than active voice. This is in keeping with the idea that the results of the work do not depend on individual participants or particular situations. Central importance in the sentence is given instead to complex nouns, which are constructed on the basis of scientific procedures. In a strangely anthropomorphic twist, agency is given to the procedures, for example 'this procedure resulted in births of embryonic cloned offspring'. 'Embryonic cloned offspring' is the complex noun; it was the procedure which resulted in the births, rather than any animal actually giving birth. The living being is not presented as a whole, nor necessarily as an intrinsically successful agent. Some examples include: 'milk from a 2-month-old goat containing the gene for human anti-thrombin III yielded...' (Paterson et al. 2003); 'many of these organisms lack the mechanisms or possess the wrong machinery to perform...' (Wall 1999); 'the efficiency of the technique remained stubbornly low' (Vajta and Gjerris 2006); 'recipient oocytes are usually obtained from ovaries sourced from abattoirs' (Vajta and Gjerris 2006); 'the full developmental cycle could not be completed – donor cells resulted in tadpoles, not in fully developed frogs', and so on. The latter examples come from a recent review on the cloning of farm animals. (Vajta and Gjerris 2006). This is a clear, well-presented piece, in which, since it is a conventional science review, the writers are obeying the usual stylistic rules. However, interestingly there are instances where it is acknowledged that the results depend on the individual researchers. This quote refers to the results of nuclear manipulation:

Seemingly many of the differences observed are due to relative disparities in operator skills. One factor may be speed of manipulation. Workers performing experiments side by side with shared sample can produce irreconcilable data.

(Vajta and Gjerris 2006, p.219)

The writers also give the very individual example of one of the earliest cloning experiments where Hans Spemann used a hair from his baby boy to separate the cells of a sea urchin embryo. The use of hair provides a fine symbolism of human-animal connections and divisions. I have alluded to hair, or baldness, in several of the Progeny Sonnets of Chapter 3.

Experimental science depends, at least to some extent, on specific people and events, yet a central tenet is that results can be replicated, no matter the person or place of the researcher. The title of one of my poems, *That the Attitude Influences the Result*, would be a controversial statement in orthodox science. That said, intuition, 'green-fingers' and creativity play a part in scientific research. Nature 'herself' is actively involved:

Considering the delicate handling of genetic material during the normal process of fertilisation and natural gamete development, it is simply a miracle that such a drastic intrusion such as somatic cell nuclear transfer ever results in embryos, fetuses and viable offspring. It seems that nature is more flexible than science once supposed and can – to a degree compensate for the enormous damage caused by the primitive manipulations of the scientist.

(Vajta and Gjerris 2006, p.216)

Generally speaking where the animal is referred to as a whole, it is as a functional, mechanical whole: a disease model, a bio-reactor, a 'candidate for breeding goals', a xenotransplantation donor and so on. In agricultural science, proteins are 'harvested', nature is 'improved' upon, reproduction is 'assisted', 'livestock' are farmed. To take an idea from Vico, each phrase is a small metaphorical fable in itself (Vico 1968, p.129). Even in the less applied biological sciences, such as ethology and animal behavioural sciences, the concept of 'behaviour' implies the isolated behaviour is a response to something external. Intrinsic agency of the whole animal him or herself is subverted. Meaning is given to the animal by the underpinning scientific theory, by the particular observations which the observer has chosen to make, or manipulations which he or she has chosen to perform. The animal mind is 'denied, qualified or sidestepped' (Crist 1999, p.1). Literally, then, science writing denies 'being' to the creature. This was not always the case. Darwin's writing shows a much more engaged attitude (see below) which was also found in early twentieth-century science writing and persists in populist science publications. But, by and large, these publications are designed to communicate to the 'general public', whilst much of the research is imagined in terms of mechanical metaphors and detached 'interactions'. Similar comments

can be made about the commodification and consumption of animals as food, where the animal as it is eaten becomes the 'absent referent' (Adams 1996). The dissociation is partly due to the urbanised living where people are less in contact with domesticated animals.

The functional and technical writing in science can be seen as a further layer of dissociation, which denies our human-animal continuity, our 'being together'. If we draw on our experience as human animals, we know that an animal is an active being, with 'authorship' embedded in its very body (Crist 1999).

Ordinary language, as opposed to scholarly detached composition, can connect humans with animals, in a 'vernacular of action' (Crist 1999); we run, eat, sleep and breathe together. A faithful description of an animal would attempt to show that its actions are intrinsically 'meaningful, authored and continuous, in a 'stream of living' (Crist 1999, p.4). Darwin was fond of the aphorism, 'nature makes no leaps' *natura non facit saltum* (Crist 1999, p.18). Our evolutionary kinship with animals and our wholeness within all of nature could be acknowledged in the form of writing itself. Darwin when he wrote *The Expression of the Emotions in Man and Animals*, used terms such as joy, love, grief, pain, vexation, jealousy to reinforce this continuity (Darwin 1965) <sup>1</sup>. As Crist explains, 'emotion is incarnate', it is made manifest in the body, it can be seen in action. The only way that we, as individual human beings, can understand anything of what it is to be another animal, or another individual is to observe closely, carefully, drawing on our own sensory experiences and instinctive responses. In certain areas, such as pain research, animals are used as models, implying that the experience is felt. Only recently has pleasure been acknowledged as a valid scientific research topic in ethology (Balcombe 2006).

Sensory experience is complex and elusive, complex because it requires a whole conscious organism to happen and elusive because it is a private experience.

(Balcombe 2006, p.21)

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<sup>1</sup> For a full discussion of Darwin's anthropomorphism, see Crist, chapter 1.



An 'inter-subjective' connection can happen where there is an attitude of hospitality. I do not think that this knowledge of nature happens at our command, or by the interrogation of nature, to use Baconian metaphors.

There are, however, pockets of activity within science, where researchers are working to express animals within a holistic theoretical framework and working within the continuity of human-animal experience. Two examples come from the research work of Francoise Wemelsfelder (Wemelsfelder 1994, Wemelsfelder 1997, Wemelsfelder et al. 2001) and that of Craig Holdrege (Holdrege 1988). Just as the husbandry of animals can be understood as a striving together of human and animal, it can be conceived as a recognition of the qualities and the sensory embodied experiences which human animals hold in common with other animals and indeed, to some extent, with all of nature. Since intuitively and by experience, we as living beings, know what it is to be a whole, active, individual entity, it is possible to apply this towards a greater understanding of animals and their welfare.

Francoise Wemelsfelder has helped to pioneer a 'whole animal' approach in the science of animal behaviour. A feeling, she maintains, is not a cog which may, or may not, be present in the wheel of a mechanical animal. Rather, feelings are expressed in the behaviour of the whole animal. Humans can, through their own senses, engage with this aspect of animals and can thus measure with reliability and inter-subjective agreement, qualities of the animal's experience. Animals, she argues, are constantly active, innovative and flexible. Boredom, depression and subjective suffering can be recognised where animals are kept in long-term captivity in a barren environment, such as those of intensive farming. Wemelsfelder uses her methods to promote principles of good stockmanship. Her research is also applicable to behavioural science generally, where object-based knowledge and experimental control tends to underplay the animals' own capacity for intelligent thought and emotion. Conversations with Wemelsfelder initiated Wordpigs. The act of dancing as a symbol of freedom is paralleled in Town with Meat Factory. The horrific (human) thought that animal suffering might in certain ways parallel human suffering is explored in McFarland's Equation of Suffering (see Chapter 6).

Craig Holdrege is a 'Goethean' scientist who has awakened interest in the contemplative 'delicate empiricism' of the German poet Goethe. Holdrege has

specialised in work with animals: the lion, the horse, the sloth, the elephant, the giraffe – he describes the morphology, way of life and engagement with environment for each species as a whole ‘way of being’. Holdrege’s science is quite unlike conventional science – explanations do not depend on the abstract isolation of single features, nor does he seek explanations in terms of ‘underlying mechanisms’ and there are no appeals to research applications or to possible interventions. Holdrege promotes recognition of the intrinsic worth and rich complexity of the whole animal. A further difference between this approach and that of conventional science is the language used. Where there is no seeking of abstract underlying mechanisms, there is also no need for technical terminology. Holdrege’s work depends on careful, vernacular linguistic expression, conventional science rhetoric is set aside. (Holdrege 2005, Holdrege 1988, Holdrege 2002, Holdrege 2004). The reader can recognise perhaps a subtle connection with the traditional use of animals in fables to denote certain qualities, although Holdrege’s work is not directly moralistic. The Goethean method is generally moralistic in that the organisms are allowed to be ‘whole beings in themselves’, rather than being conceived analytically or functionally. The animal is its own fact and theory (Bortoft 1996, p.92). There is no abstraction into measurement or formulae. The studies are conducted in a spirit of ‘mutual interaction’, a conversation with nature, rather than an anthropocentric striving for control of the situation. In other words, such research involves ‘listening’ to nature’s own holistic language, which in turn depends on an intuitive mode of consciousness.

There are many writers who explore questions relating to the powerful, life affirming alignment of the human and the animal world (Gray 2002, Caras 1996, Crist 1999, Midgley 1983, Grandin 2005, Gaita 2002). In scientific research writing, however, there is fear, or at least avoidance, of anthropomorphism, of falsely ascribing human attributes to animals or to nature. Anthropomorphism is not easy to avoid and it may have an essential role to play in the connection of human’s experiences with those of other live beings. As we have seen, it is quite artificial to give agency to processes and parts. There are also questions to be raised about common metaphors in science and the extent to which they are appropriate, the ‘goodness of fit’ (Gross 1996, p.30). Analogies from the worlds of individualism, competition, economics and mechanics are not in themselves more purely scientific than those drawn from everyday lives of creative activity, emotions and relationships. Finally, the imagination is involved

as part of everyday scientific research activities and planning. There is an argument to be made that an 'ethical imagination' could be better trained if this was acknowledged more overtly. To revisit the idea of shaping husbandry – the shaping of the 'house' of interaction can be done in many different ways; the shaping of a science of husbandry need not be done with conventional metaphors. Further, as we will see in the following section and in Chapters 5-7, there is a rich source of wisdom in vernacular words and etymologies which could be rediscovered (Midgley 2002, Midgley 2003, Vico 1968).

## **2.4 A Discipline of Relations to Make a Third Place**

A scientific worldview that is embodied would involve visceral honesty, based on human experience and would be especially appropriate with animals. Qualities, which cannot be measured numerically – those attributes felt, sensed, intuited and detected by human senses – are not easily included in conventional science. Human involvement and the visceral complexities of life as it is experienced, have been largely missing from the traditional paradigm of science. These so-called 'secondary qualities' include sound, colour, odour, touch, pleasure, pain and so on: they involve value judgements based on experience. In this way, a whole human researcher can be viewed as interacting with the whole animal:

This after all is the wider reality test: observation and measurement of quantifiable variables is a narrow test indeed in comparison with this which takes the whole human being as its instrument for exploring reality.

(Matthews 1991, p.50)

An embodied empiricism, involving qualities, would complement the more traditional, reductionist science, towards a fuller understanding of the world. It would help in restoring balance to scientific knowledge and in promoting a respectful, 'delicate empiricism' towards the organism of study, involving both use and respect (Wahl 2005). Whether this work constitutes a 'science of qualities' (Goodwin 1994b), a 'science of relations' (Serres and Latour 1995, Serres 2003) or is not within the remit of science, is open to debate. It is, after

all, boundary work. Goodwin's suggestion for a science of qualities would involve the systematic cultivation of the intuition, and the recognition of wholes rather than simple parts. There is a role for the expression of lay, field knowledge and the use of participative methods (Goodwin 1994b). We have seen, for example, that conventional biotechnology is participative, but it is not professionally written within this paradigm. We have had an example of this insight, the title of the biotechnology review mentioned earlier is: 'Science and technology of farm animal cloning: state of the art'. Goodwin writes that a science of qualities would be as close to the arts as to conventional science, at least in some aspects. The purpose of traditional science is to explain the physical world in terms of general, observable truths. Science progresses by means of cycles of induction and deduction; the knowledge which is represented is, in a sense, always provisional. Creative practice, inspiration, intuition and imagination are involved in the lives and work of scientists as well as artists. However, a science of qualities, in remit and methods, would connect more closely with creative practice, and the event may be compared with, and depend on, the emergence of order from a complex situation. There is not necessarily a predetermined hypothesis, nor do the results have a burden of evidence or proof associated with them, a work of art may be generally recognised as such, without claims being made of logical, objective truth.

The comparison and differentiation between science and the arts continues to raise many interesting questions about the creative process itself. For example, the recognition of qualities, as opposed to the measuring of objective quantities, relies on language in the expression of results. It also involves recognition by analogy – the ability to see one thing in terms of another. A science of qualities connects with 'poetic truth'. The selection of metaphors, even within conventional science, could be viewed as part of the creative process, 'the organising idea' behind the work (Bortoft 1996). When we describe the Earth as 'a mother' or 'a resource' how far should we take these metaphors? To what extent is it apt to depict an organism as a 'work of art' or as a 'bio-reactor'? Husbandry would suggest that both art and science are involved, that an organism cannot be singly defined. The poems of this chapter involve the makings of 'third places', they show the importance of the imagination, of listening, sometimes of preserving silence, of exercising caution or of letting go of any single objective truth.

What are the differences between poetic truth and scientific truth? How can poetry help to develop a science of husbandry? I have already drawn attention to the poetic use of a single word; of any single word, knowing and working with the ambiguities, etymological relationships. Poetry involves working with the creative possibilities of language and at the limits of language. Poetry does not give definitive answers and it cannot be used to make absolute statements. The very language will not allow it. If poetry is both written and read with an attitude of openness, then the poem itself becomes a bridge between the author/reader divide, just as a poem can bridge the subject/object divide. This is not to say that a poem is an amorphous, 'free-for all' spillage of words loosely used. Yet the use of words is not unambiguous, and the poem is crafted to preserve natural creative attributes of language. For this reason, a poem is capable of holding aspects of universal truth; it is multifaceted. Poetry does not provide answers, in the way that a scientific method would strive to provide answers. The power of poetry is that, to enter the sound, meanings and patterns that words make, is to experience many truths, many possibilities, as they interact. A poet (and, indeed, a reader of poetry) could seek to develop the quality of 'negative capability':

Several things dove-tailed in my mind, and at once it struck me what quality went to form a Man of Achievement, especially in Literature, and which Shakespeare possessed so enormously – I mean Negative Capability, that is when a man is capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and remaining content with half knowledge.

(Keats 1817)

'The form of Shakespeare is plural' (Bate 1997, p.33). In Chapter 4, Shakespeare's use of husbandry is juxtaposed with the simple, innocently earnest world of Thomas Tusser, who wrote to fashion husbandry.

Chapters 5-7 will focus on Virgil and Lucretius to address questions of anthropomorphism, appropriateness of metaphor, expressions of reductionist and holistic worldviews, and of the relationship between humans and other animals. These Roman poets were working with both poetic and scientific principles and content. Their work is still a rich source of fresh, profound

linguistic fluid truths about writing the human-animal connection. We can see in *de rerum natura*, the way in which Lucretius uses complementary metaphors to deal with technical terms, and to keep the meaning active (Sedley 2003). Apt also is Lucretius' extended demonstration on the use of reason to involve the senses and recognition of qualities. Virgil's *Georgics* can be juxtaposed with *de rerum natura* to show a less materialistic, more animated version of nature. Both writers strive to afford action, rather than passivity for nature, conceiving of a dynamic, interrelated universe.

## **Chapter 3: Husbandry as Creative Resolution**

- 3.1 Research as a Transformation which Unfolds
- 3.2 Qualities and Senses
- 3.3 The Poetic Quest
- 3.4 Husbandry and Holism

This chapter presents the research process as an event which cannot be predicted, but rather unfolds. The evidence of the senses and the recognition and depiction of qualities is the basis of human engagement with others and with nature. Research can be envisioned as a poetic quest: a seeking of creative resolution in a dynamic circumstance, the creation of a third place between self and other. To participate would be to accept uncertainty, and to use intuitive ways of knowing, to recognise the whole which is present in all parts. The same skills are necessary for a reader encountering a poem.

This sonnet sequence was written during the research visits for this thesis, between 2003 and 2005. Sire, Dam, On Visiting the Aberdeen-Angus Society Headquarters in Perth and Extract from Breeding Notes were inspired by the progeny books, which record the maternal line of the Aberdeen-Angus breed of cattle. Anthropomorphic, Arc, Bald and Carousel came from conversations with Bob and Grace Crockatt, who bred The 'Cherry Blossom' herd for over 40 years. Rawburn Transformer, an Aberdeen-Angus bull, is owned by John Elliot, farm manager at Roxborough Mains, Kelso. Crisis refers to the death of my father, Robert McFarland, and this coincided with the 2001 Foot and Mouth crisis. Birtie was written for Brigadier Birtie Birtwhistle who was awarded the CBE for his part in managing the disposal of a backlog of around 100,000 contaminated carcasses. Sunandini refers to a cross breed of cattle, which was developed to increase milk yields in Southern India and maintained by the Kerala Livestock Board in Thiruvananthapuram. Gallows Hill was written for Valerie and Walter Sheach Leith, who farm in Aberdeenshire.

Poems:

#### PROGENY SONNETS

*Note: pages with poems have been removed for reasons of copyright.*



**3.1 Research as a Transformation which Unfolds**

Husbandry of land and of animals depends on engagement between human and non-human. The skills involved have always been valued as both art and science. Husbandry can be viewed as the process of achieving an ongoing resolution between extremes, as mentioned earlier, ‘a third place’, an active compromise. This general description applies to those who work in agriculture and in farming animals, yet it could also describe the work of anyone involved in field work, scientific research, or intensive production of animals for food. The day-to-day realities of such work are that the human-animal relationship is complex, ambiguous, and dynamic. The animals can be described as ‘sentient commodities’ and both instrumental and emotional attitudes are likely to coexist in the husbander or stockperson (Wilkie 2005). Husbandry is a skill which depends on ‘tacit knowledge’ (Polanyi 1969), the use of the senses and the intellect, and on commonsense and empathy. The goals of husbandry traditionally have been both profit and pleasure. This holistic view cannot be reconciled with a rhetoric of disengagement and with the notion that animals are simply commodities.

In this project, there has been an opportunity to consider the relationship between research subject and object, between knowledge which can be expressed verbally and intellectually and that which is tacitly, emotionally or instinctively known. Engaged, naturalistic research can be described as ‘place-making’. Place-making applies also to the expression of the experience as poems, in that the poems of this research were an exercise in shaping, in words, a place for the animals, the ‘husbanders’, myself, the readers, all of us as active participants and as whole individuals. This work falls within the idea of practice-centred, or practice-led, research. From an academic point of view, the research paradigm is closest to ‘constructivism’ as shown in the following Table 3.1.

Table 3.1 Paradigms of Enquiry

## MAKING A THIRD PLACE: THE SCIENCE AND THE POETRY OF HUSBANDRY

	<b>Positivism</b>	<b>Post -positivism</b>	<b>Critical Theory</b>	<b>Constructivist</b>
<b>Ontology</b>  The nature of reality: the 'knowable'.	<b>REALIST</b>  Reality exists 'out there' and is driven by immutable natural laws and mechanisms. Knowledge of these entities, laws and mechanisms is summarised in the form of time- and context free generalisations e.g. as cause-effect laws	<b>CRITICAL REALIST</b>  Reality exists but can never be fully apprehended. It is driven by natural laws which can only be incompletely understood	<b>CRITICAL REALIST</b>  Reality exists but can never be fully apprehended. It is driven by natural laws which can only be incompletely understood	<b>RELATIVIST</b>  Realities exist in the form of multiple mental constructions, socially and experientially based, local and specific, their form depends on the persons who hold them
<b>Epistemology</b>  The nature of relationship between inquirer and the knowledge	<b>DUALIST/ OBJECTIVIST</b>  It is both possible and essential for the inquirer to adopt a distant, non-interactive posture. Values and other biasing and confounding factors are thereby excluded from influencing the outcomes	<b>MODIFIED/ OBJECTIVIST</b>  Objectivity remains a regulatory ideal, but can only be approximated, special emphasis placed on external guardians such as the critical tradition	<b>SUBJECTIVIST</b>  In the sense that values mediate enquiry	<b>SUBJECTIVIST</b>  Enquirer and inquired are fused into a single entity. Findings are the creation of the process of interaction between the two
<b>Methodology</b>  How should the enquirer go about finding knowledge?	<b>EXPERIMENTAL/ MANIPULATIVE</b>  Questions and/or hypotheses are stated in advance in propositional form and subjected to empirical tests under controlled conditions	<b>MODIFIED EXPERIMENTAL/ MANIPULATIVE</b>  Emphasize critical multiplism. Inquiry in more natural settings, qualitative methods, depending on grounded theory and discovery	<b>DIALOGIC/ TRANSFORMATIVE</b>  Eliminate false consciousness and energise and facilitate transformation	<b>HERMENEUTIC/ DIALECTIC</b>  Individual constructions are elicited and refined hermeneutically, compared and contrasted to gain consensus

Adapted from (Gray and Malins 2004, p.20)

The relationship between the inquirer and the inquired was 'subjectivist', that is, mediated by values, and facilitated by qualitative interaction (Gray and Malins 2004, p.20). The findings or 'individual constructions', which came about as a result of the enquiries, are expressed in and achieved by the poems which were written. These are not didactic poems on animal husbandry, but this subject serves to harness details of individual situations, backgrounds and histories to overarching concerns and enquiries about life as a whole. The Progeny Sonnets, for example, draw on conversations with the Crockatt family who bred Aberdeen-Angus cattle for more than forty years. This context gives a forum for including themes of fertility, selective breeding as an art-form. Also in this set of sonnets the death of my own father, which in part prompted this research, is linked with the concurrent foot and mouth crisis and with Brigadier Birtwhistle who managed the disposal of animals. In this way juxtapositions were allowed to happen, serendipity and coincidence were followed freely without fear of research bias or contamination – the only criterion was that the poems would stand alone as crafted artworks. The poems do not require this thesis to explain them. In this sense a metaphorical comparison can be drawn between a poem and an organism – both are autonomous works of art, and exist in their own right quite apart from any functional context. The names of the Aberdeen-Angus cattle are like 'found poems', each name being both poetic in itself and representing a unique animal.

The poems mirror the research concerns – how to research openly and creatively, how to grant agency and intrinsic worth to natural things in the writing itself, how to balance analysis with synthesis, reductionism with holism. The hope is that the poems will stand alone, that a poetic insight derived from a small particular instance can encapsulate something universal. Poetry, by its nature and holistic use of language, is a way in which to understand and to depict wholes in writing. That the research events were each a unique combination of individuals, timing, and unfolding could also be said for any research process. What continues to be unique, is the involvement between individual reader and poem. In this sense the poems ought to be open to interpretation. Generally, in what might be termed 'naturalistic enquiry' with a natural setting and emergent methodology, the research findings are evaluated by subjective consensus – peer review, exhibition, seminar, publication (Gray and Malins 2004, p.73). The same criteria apply where poetry is the outcome.

The way to access quality is to interact with the entity in question, just as 'you live through an event by coupling with it' (Noe 2006). This, in my mind, links with the most fundamental questions of good husbandry – how to access quality, or as expressed more poetically in many myths and fables: what is good fruit? The literal relevance of fruit to husbandry is obvious, the symbolic relevance recalls Shakespeare's sonnets where fruit gives perpetuity – beauty must reproduce in order to last, and is a symbol of creativity. Lucretius and Virgil also used the agricultural metaphor of grafting (West 1994). These metaphors could also be applied to a constructivist research process, since it is a coming together of 'inquirer' and 'inquired', in a process of mutual transformation:

the individual seeking knowledge is locked in an embrace with the world. Out of this union emerges a generated reality that bears the imprint of both natures involved in the process.

(Goodwin 1994b, p.240)

The outcome cannot be predicted, there is no previously defined hypothesis as such, it is taken on trust that order will emerge in situations where the formation of rich interconnections and deep engagement is allowed. The possibility also exists that some aspects will remain unknowable, no matter the depth of the engagement. The involvement of the researcher is a crucial part of the research, his or her own transformation depends on imagination, intuition and feelings, as fundamental aspects of the process. Further, values and ethics can now be addressed as an inherent, ongoing part of the responsible relationship which the researcher develops with the subject. This contrasts markedly with traditional science, as it is written, in that assumed ideals of separateness and of detached objectivity extend to the role of the researcher. This also has the consequence of artificially separating ethics and science, which are not, in the event, separate.

Living things are complex wholes. An organism is a 'natural, creative, dynamic unfolding – an ordered transformation' (Goodwin 1994b). In part, the impetus for a third place husbandry, is the attempt, relevant to biological sciences, to see living things as entities which maintain themselves, yet also unfold in time.

All living things maintain themselves within their lifespan. Expressed more poetically, they strive both 'to be' and 'to create'. The challenge is to see, by intuition perhaps, the profound relationship between the parts and the whole: 'The whole imparts itself; it is accomplished through the parts it fulfils' (Bortoft 1996). Nature supplies everyday examples of this concept, just as the three leaflets of a clover leaf were traditionally used to symbolise the unity of the trinity, just as the poet Goethe recognised the union of male and female principles even in a plant's extended stem and spiral of leaves. He also recognised the continuity between humans and animals and coined the word and concept of morphology. But despite these relatively famous examples, holistic knowledge is neither mystical nor just open to poets – farmers, gardeners, scientists, anyone who works with nature already knows the principles.

The relationship between parts and wholes, and the way in which poetry can express it is illustrated by Virgil and Lucretius throughout this thesis. Animals and humans for example are not separate, they are ultimately the same life-breath. Lucretius' unity is more recognisable in modern science since it does depend on invisible, indivisible atoms which compose everything. It is especially apt to spend time with Lucretius because the atomistic model generally is often pinpointed as the origin of positivism and reductionist science (Bortoft 1996, Midgley 2002). *De rerum natura* hints that Lucretius was aware of the drawbacks, it is written as poetry after all. Virgil's unity is more fluid, it is activities of life which all things share. In Chapters 5 and 6 we will look at these approaches more closely.

A crucial difference between conventional, positivist research and the post-positivism, critical or constructivist approaches is the way in which qualities are handled. As we will see in Chapter 4, husbandry is almost always associated with value and quality judgements; the word commonly appears with the either 'good' or 'bad'. Conventional science also may be described as good or bad, but qualities because they are perceived subjectively were gradually outlawed from modern science (see also Chapter 4). The following section retraces the concept of 'quality' and the difficulties in reconciling qualities with positivist models. The most recent solution within biology for a 'science of qualities' has been proposed by Goodwin, who outlines methodological 'touchstones' as a way of achieving creative resolution in a complex situation.

### 3.2 Qualities and Senses

The literal meaning of 'quality' is 'who-ness', from the Latin *qui* 'who' and *-alis*, an adjective. However, the concept was discussed by the ancient Greek philosophers and originally the word was a technical term, first used by Plato (Sedley 2003, p.37). Plato was explaining his theory of sense perception, that qualities such as 'whiteness', 'hotness', 'heaviness' come into being as a consequence of an intercourse between object and sense organ (or 'agent' and 'patient'; or the actor and that which is acted upon). This he saw in the context of his idea that 'the universe really is motion and nothing else'. The motion is of two kinds, one with the power of acting and one of being acted upon:

From the intercourse and friction of these with one another arise offspring, endless in number but in pairs of twins. One of each pair is something perceived, the other a perception whose birth always coincides with that of the thing perceived.

(Plato 1960, p.46)

Plato argued that 'white', 'hot' and 'heavy' have no being just by themselves, they only come to exist when the external object and the sense organ interact (Plato 1960, p.97). The agent comes to express a quality rather than to be a quality. Qualities from the ancient Greek outset, then, involved an interaction and a mutual transformation, as Plato saw it, the sensory birthing of pairs of offspring. The idea that the universe is ultimately motion interestingly underpins both the Lucretian model of a universe based on falling atoms and Virgil's poetry, where verbs are crucial connectors.

Aristotle associated qualities with human characteristics: 'By quality I mean that in virtue of which people are said to be such and such.' However, Aristotle at times discussed qualities of other things, such as honey (Honderich 1995, p.736). Honey seems to have been a popular case in point for the ancients. Lucretius explained the shapes of atoms and their interaction on the human senses by linking examples of sensations with possible shapes of atoms which

might cause such sensations. It is a literal vision – as if the atoms were burrs or hooked seeds. One of his favourite examples is also honey, because its complex heterogeneous nature calls for explanation and because for Lucretius, honey was also a metaphor for the function of poetry in making severe truths palatable. Virgil has made a subtle link in the *Georgics*, where a final resolution between practical realities and mystical knowledge is achieved by the creation of a new hive of bees.

In Europe, around 1300, *qualitie* referred to character, disposition and temperament, later that century it was used also for ‘grade of excellence’ (Barnhart 1999). *Qualitatyve*, before 1425, referred to the ancient concept of the four humours - the primary qualities of heat, cold, moisture and dryness and the associations with fire, earth, water and air and with personal attributes or constitutions (sanguine, melancholy, phlegmatic, choleric). We will return to the ancient system of four fundamental qualities, in Chapters 6 and 7. These elements could be understood as a version of materialistic reductionism, in that they allowed for the sifting through a mass of information towards a conceptual order and pattern. However, a holistic and deeply symbolic perspective was maintained because the terms were understood poetically. Heat represented passion and was symbolised by the horse. Air was the basis of connection for all living things – the *anima* or life-spirit and so on. Even Lucretius, who argued against the philosophical position of the four elements, drew on them (earth, fire, water, air) to balance and structure his poetry.

The seventeenth-century philosopher, John Locke, used a snowball to illustrate qualities, explaining: it has ‘the power to produce in us the ideas’ of white, cold, round (Honderich 1995). ‘The power to produce in us the idea’ is an apt phrase since a certain quality may be grasped as a result of subjective experience, yet be equally recognised by more than one individual. This is important generally in the evaluation of naturalistic research, it is also important in Goodwin’s science of qualities. Plato’s idea, that qualities come into being as the result of interaction, ties in with the idea of research as creative emergence, the birth of endless pairs of twins – each pair consisting of the perception and the thing which was perceived.

However, qualities cannot always be measured, nor even necessarily described in language: ‘any number are nameless, though names have been found for a

whole multitude' (Plato 1960, p.46). Modern science developed in such a way that 'number weight and measure' was the preferred means of depicting information. It could be described as a science of numbers and differences. In the positivist paradigm, natural laws are depicted in terms of underlying mechanisms ideally generalised into equations, or numerical relationships. This tendency of science to focus on attributes which can be measured (such as mass, position, velocity, momentum) has gradually excluded both qualities and human subjective engagement. Qualities – those attributes felt, sensed, intuited and detected by human senses are known as 'secondary qualities' (sound, colour, odour, touch, pleasure, pain). They involve value judgements based on experience. As a consequence, human involvement and the visceral complexities of life, as it is experienced, are missing from the traditional paradigm of science. 'Nature has become denatured' (Bortoft 1996). The reasons for orthodox science having developed with an emphasis on quantities are underpinned by a metaphysical model which can be traced back as far as Plato, whose model argued for a separation from truth (or perfect forms) and the reality of experience. The atomistic model also has been associated with an ultimate loss of qualities from science, in that it especially focuses on 'body' – that touch is the only evidence of reality. Famously the model depends on the analytical assertion that there can be only atoms and void, and nothing in between. This leads to an exclusion of the roles of other senses and to a mechanical vision of bodies/atoms subject only to pushing and pulling, causes and effects. As Bortoft explains, touch and a sense of solidity are needed for measurements which depend on boundaries (and thus categories), number and shape. Experiences which cannot be accounted for, or measured in, this way are likely to be described as 'subjective' with the implication that this means unreliable, biased, or unscientific. It is ironic that nature has become denatured by conceiving her in terms of solidity.

In Europe from the sixteenth-century, a complex set of sociological circumstances further emphasised the purity of measurement, the 'improvement' of nature and a rhetoric of productivity and individual profit. The impetus for these values was grounded in patterns of land ownership and usage, but also undoubtedly influenced by other social aspects such as the invention of the printing press and outbreaks of the plague. As we will see in Chapter 4, a religious shift towards a puritan ethic, coupled with the ongoing development of scientific positivism as promoted by characters such as Francis



Bacon, played a highly significant part in demoting sensory engagement with nature. Bacon held the view that whilst the study of nature was worthwhile, it did not constitute the ultimate reality. He wrote in 1605 in *The Advancement of Learning* (Book 1:3) that the senses of man were like the sun which:

openeth and revealeth all the terrestrial globe but then again it obscureth and concealeth the stars and celestial globe; so doth the sense discover natural things, but it darkeneth and shutteth up divine. divers great learned men have been heretical, whilst they have sought to fly up to the secrets of the deity by the waxen wings of the senses.

(Bacon 1998)

As we shall see in Chapter 4 it is not easy to simplify Bacon's position, caught up as it was in the still unfolding consequences of the reformation, associated with occult science and alchemy ('occult' meaning hidden) and also passionate about progress and truth, where truth was to be based on quantitative measurement. Bacon, although he quoted both Virgil and Lucretius, would have poetry excluded from his 'new world' – from *The Advancement of Learning* (book 2:10):

Another defect I note, wherein I shall need some alchemist to help me, who call upon men to sell their books and to build furnaces; quitting and forsaking Minerva and the Muses as barren virgins.

(Bacon 1998)

Modern science and agriculture developed in tandem. A certain set of values wove a version of the human-nature relationship which was detached, yet profit-seeking, hard-working and innovative, but often at the expense of natural wholeness and engagement. The philosophical questions of ultimate reality and of human-nature relationships will always be open. Those values, which underpin both science and agriculture, are open to debate. Such debate is crucial for the earth and for the evolution of our society (Diamond 2006).

The quantitative, positivist approach in dealing with living organisms, tends to reduce these 'systems' and 'processes' into constituent parts, to facilitate the

measurement of variables. Interaction between parts has been perceived as mechanical, explained on the basis of linear cause and effect relationships. Research, under these terms becomes a matter of prediction, control and manipulation. Such *in vitro* work generates detailed descriptions of mechanisms which give limited insight into the dynamic live being, which exists as a complex entity in a state of flux with its environment. But *in vitro* systems give limited insight into the *in vivo* situation. Even in the most barren of laboratory situations, a research event is a rather complex interaction involving qualitative engagement, historical, temporal and individual underpinnings of the occasion. As we have already seen, the reporting of such experimental work is written in the passive voice, to echo the idea that the subject-object interaction can be generalised and was not specifically attached to that particular research event. We have also seen that as a consequence of this, nature is 'written out of the equation', as non-active. Further the idea that qualities arise from an interaction, giving rise to both the perception and the thing perceived at the same time, has been set aside. Qualities are more likely now to be said to belong or to be possessed by the thing in question, rather than to arise by interaction with it.

In a paradigm of constructivist enquiry, knowledge is based on interaction. 'Meaning can only arise in relationship. A wrong relationship will produce a distorted message' (Paparella 1993). An open engagement with the qualities of nature via the human senses is not a relationship to be feared or shunned, it is part of knowing. The fear expressed by Bacon is that the senses can deceive us, that nature is wild, that we may find our intellectual knowledge in a state of chaos if we do not have rules. To state the research problem in another way: the missing link in the positivist objective paradigm is 'self-knowledge', which complements other types of knowledge: metaphysics, (rational intuition), mathematics (deductive knowledge), natural science (empirical knowledge) (Paparella 1993, p.31). Clues towards self-knowledge come from these sources: reflection on individual experience, and language – that ancient, ongoing record of humanity.

The crux of the poetic quest is to handle such an open remit, and to reach creative resolution by working with the medium of words, not against them. Language provides the necessary wisdom and preserves poetic, intuitive connections.

### 3.3 The Poetic Quest

The poetic quest can be variously defined: the search for order from chaos, redress towards that third place between extremes, the achievement of holism, or Keats' negative capability. The phrase 'poetic quest' comes from analysis of the poetry of Ted Hughes (Skea 1994). Hughes' understanding of nature was neither sentimental, nor purely intellectual, as both a farmer and a poet his work was an ongoing quest towards spiritual wisdom which was not ethereal, detached but grounded and unified. Hughes recognised the need for an awareness of the spiritual dimension which, crucially, is not from some abstract heaven, but can be recognised in the vastness of the here and now. 'The dirt becomes god' (Skea 1994, 123). This is also a search for wholeness, a journey which begins with human alienation from nature and returns to 'Oneness' as part of nature.

The 'poetic quest' does not have to be achieved by writing poetry, any creative practice can be recognised as a seeking of resolution. Some commentators widen the understanding of creativity to include the self-determined properties and patterns which occur universally in nature, on micro and macro levels. This would include, for example, a living single-celled or a many-celled organism, collections of individuals, and indeed the whole planet, as a self-patterning, creative system. (Goodwin 1994b). It would be reasonable for the methods of science to adopt the methods of nature, which are 'objective', in the sense that they are universal. If this insight is integrated into biology, it provides other ideas about life: for example, an organism could be envisaged as an unfolding work of art, rather than a collection of metabolic processes, a fight against the environment or a machine driven to reproduce. Life is a co-operative, creative process, which can be recognised on both micro and macro scales, it involves:

cycles of creative emergence and extinction in which the reward is not long term survival but simply transient expression of a coherent form, a revelation of a possible state of life which we call a species, whose value is intrinsic to its being

(Reason and Goodwin 1999).

Goodwin and Reason (1999) have provided six 'touchstones' or principles which serve as measuring poles for qualitative research, as well being characteristics of the natural creative process. These stages are based on the dynamic relationship which gives rise to creative resolution between diverse components, even opposites.

The characteristics are:

- A system of rich interconnections between diverse components providing the ground from which new order may emerge;
  - Iteration – patterns of activity within constraints (defined by rules) are repeated;
  - A pattern emerges – one which could only have been discovered by operating the iterative cycle. The pattern can be described as 'a form of bounded instability';
  - The emergent order is holistic – because every component played a dynamic part. The order did not emerge because of a set of pre-ordained instructions nor a hierarchical relationship, there were no privileged parts, no primary causes, no blueprint;
  - The transition from chaos to order or order to chaos is accompanied by transient fluctuations in the activity of the components;
  - This edge of chaos is a nascent mixture of healthy, complex variability.
- (Reason and Goodwin 1999)

These principles provide a way of achieving reconciliation between extremes. They provide a research method that can be both analytical and playful, both 'Apollonian' and 'Dionysian'<sup>2</sup> (Reason and Goodwin 1999). They remind that

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<sup>2</sup> This labelling of modes of enquiry is: Apollonian: ordered, rational, structured and Dionysian: passionate, spontaneous, playful.

creativity is a constant interplay between actor and acted upon and that perception itself is an active emergence, as we saw in Section 3.2. Finally, the ‘edge of chaos’, to use Goodwin and Reason’s metaphor drawn from Complexity Theory, is also that third place, neither complete order nor complete chaos.

Goodwin and Reason have articulated their touchstones within the content of the biology of complexity and a science of qualities. Goodwin makes clear that pattern-making is common to all living things (Goodwin 1994b, Goodwin 1994a). He gives the example of the mould *Acetabularia* which generates whorls, not because they are useful but because they are a natural expression of the inner necessity and truth of the organism. This understanding coincides with notions from older, more poetic ways of speaking – that nature is active and has spirit and free-will as inherent attributes. The apparent loss of ‘whole’ animals from conventional biology, and the loss of the sensory interaction between human and nature have occurred perhaps because these aspects cannot be readily measured. Goodwin, and others who promote a science of wholes, recall the methods of the poet Goethe. His delicate empiricism involved a conscious sensory imagination, an intuition which could be developed in the researcher. The idea is to concentrate on the phenomenon itself, to read nature’s language on its own terms. Goethe famously used this approach with plants, animals and colours, always asking: what conditions are necessary for the phenomenon to arise in nature? The potential in this way of thinking depends not on a ‘head orientated’ analysis but on an intuitive mode of consciousness, which was quite alien to conventional science even in Goethe’s time (1749-1832). Intuitive consciousness is common amongst poets and artists but also, as Goethe recognised, animal-breeders and other nature-lovers. Whenever this knowledge is to be achieved and expressed, language is both a crucial tool and a stumbling block.

Perhaps it is highly relevant that Goethe was both a scientist and a poet. Lucretius’ poetry in *de rerum natura* is not just a gimmick to ‘sweeten the message’ – the poetry mimics the message. In Virgil’s *Georgics*, the means of expression and the subject are not disassociated. Language in its preservation of poetic wisdom and dependence on sound and rhythm is the basis for poetry because language follows natural patterns. Language waits to be our collaborator in achieving dynamic resolution of complex experience. It would

be a mistake to consider poetry as the opposite of rational thought, or a frivolous activity. It involves the use of and cultivation of the imagination, image-making, which is at the very centre of human existence and is involved in all human activity. We can 'recollect a past and project a future'. The imagination is like fire, it 'presents the greatest danger and the greatest opportunity at once'. The ancient classical writers tended to be suspicious about this power: Aristotle: 'imagination is for the most part false'; Pliny: 'Nothing could be more foolish than a man ruled by imagination' (Kearney 1998). However, more recently philosophers have realised that to imagine is the act which forms the basis of consciousness, whether it is used consciously or not. It is the 'unconscious poetry of being' and 'it transcends both the empire of reason and the asylum of un-reason' (Kearney 1998).

Lucretius' scientific poetry is especially of interest because he as a character represents the man of reason, who would censor the irrational passions. He is the conscientious intellectual who operates on the basis of deductive and empirical knowledge. Yet it is his use of imagination that allows him to link atomic theory with everyday experience. Virgil, on the other hand, can be taken to represent a more open attitude, which is also perhaps more sceptical and less naive: some things will always remain unknown, the final intellectual answers will not be achieved. Virgil is content to leave the situation open: he will sing of both gods and sheep. Both poets however, are equally serious, both utterly depend on the imagination. We could say that Lucretius and Virgil respectively represent the 'Apollonian' and 'Dionysian' modes of enquiry mentioned earlier (Reason and Goodwin 1999). Since Virgil admired and was influenced by Lucretius, the texts can be read as a dialogue on the power and limitations of reason, nature, and imagination (for example in Georgic 2.490-495, see Section 6.1).

Both men also shared the goal of overcoming *metus*, fear of what might happen. It is this fear which causes the frantic rushing around that Lucretius associates with urban life, politics, religion, and ultimately sickness and corruption. The opposite state is to be blessed (*felix*) to have a calm understanding of the nature of the world (*rerum cognoscere causas*).

Lucretius can give insight towards a science of qualities because although his philosophy (and that of Greek Epicureanism) is reductionist (in the sense of

being atomistic and materialist), his vision is also one of connectedness. His writing indicates possibilities of resolution between science and ethics. It is not necessary, as a reader, to subscribe to Epicureanism in whole or detail (Virgil at times writes to render Lucretius' philosophy problematic) but it is wise to realise that the questions raised by twenty-first century science are the same ones which have existed throughout our European intellectual history.

The rhetoric of modern science could be written differently, with harmony, and Lucretius can show us how 'to tell it in our native tongue' (5:335). He is careful to avoid specialist terminology and equally careful that metaphors are used with fluidity and do not harden into dogma. Lucretius also views the earth as a sustaining mother but he is at pains to evaluate the extent to which the metaphor can be applied. By his reasoning, to call the earth 'mother' does not mean that the earth is sentient or literally alive. Nor does the use of the name of a god mean that superstition has to be the result (see Section 7.3). The Epicurean view is that the gods are not won by gifts, nor touched by anger. When Lucretius writes to dispel the power of religion, he has in mind the etymological link between *religione* and *religo*: (and in particular the negative connotations) to bind, to restrain, to tie. It is the restrictive, oppressive quality that he is striving against, and partly why he stresses the importance of free-will so thoroughly that even the atoms must possess it.

In truth, the earth was never sentient.  
It is only able to bring forth so many things  
into the light of day, because of the many atoms.  
So, if anyone wants to call the sea Neptune,  
to say that corn is from Ceres, to take advantage  
of wine from Baccus, let them, we can even  
let it pass if he invokes the earth  
as the Mother of the Gods, as long as his mind  
is not restrained with the bonds of religion.

2:652-660

Strangely, this danger of believing one's own rhetoric and metaphors too literally, is a trap that modern science has fallen into, believing that natural processes can be judged from a position of detachment – objectively and

mechanically. An overemphasis on the manipulation, control and consumption of nature is damaging to ourselves, since we, and our endeavours, fall within nature. We need to remember the redress of connection, the value of relational knowledge, our bodily associations with animals and the earth. To believe in a rhetoric of detachment, to write science as if this were the only truth, would be to believe that in our activities we are as the gods, who neither feel nor can be moved. That belief would constitute the most dangerous sort of anthropomorphism.

But to imagine the gods of the countryside is neither pagan idleness, nor dogmatic religion. 'Imagination is what makes us absolutely free and by extension absolutely responsible' (Kearney 1998, 33). Poetry is a safe place to explore possibilities, to imagine the Other, to practise the ethical imagination – to retain freedom of ourselves and afford it for others. This might also be said of experimental science in that it provides a safe place to explore possibilities. The danger lies, perhaps, in presenting truth which excludes both the inquirer and the inquired, the perception and that perceived, as if it were the only truth.

The ongoing, intuitive, poetic quest then is to reconcile ourselves with nature, to attain the felicity of here and now. It is not to find answers, but to 'live the questions' as Rilke advised a young poet:

Try to love the questions themselves, like locked rooms and like books written in a foreign language. Do not look for the answers. They cannot be given to you because you could not live them. It is a question of experiencing everything. At present you need to live the questions.

(Rilke 2000, p.35)

To live the questions requires negative capability, to be able to work within half-knowledge, to preserve mystery, space for something beyond facts. The poetic quest, and a journey towards wholeness, are the same quest, beginning and ending at the same place: 'a belief in the immediacy and actuality of the energies of the source in nature'. After the journey, this is the progress: we have a better understanding of our place, our own 'participation in the flux' (Skea 1994). The flux is the inherent course of things, the fluidity that underpins all life. It is deeply held in 'nature'; from *nascor*, to be born; it relates to *nato*, to



swim, to be full, *natio*, a race or tribe, stock. The principle of continuity is also one of flux. The achievement of calmly steering through these waters is an active process.

### 3.4 Husbandry and Holism

The challenge of holistic science is to recognise a concentric pattern: an organism as a whole entity, in the context of the earth as a whole, the universe as a whole. Henri Bortoft uses the idea of a hologram, where the entire picture is present in each part. The picture becomes clearer, the resolution increases, the more parts are studied (Bortoft 1996). Matter, as he explains, is also holistic, in that the mass of an object is a reflection of the whole universe in that body. Nothing is truly independent. The whole cannot be known by arithmetically adding the parts, nor is it seen by stepping back, for an overview. As Bortoft explains, the way to intuit wholeness is to have a receptive mode of thinking, in addition to, the analytical, intellectual mode. Goethe expressed this way of knowing poetically, because it is a poetic way of viewing the world: 'an instance is worth a thousand, bearing all within itself' (Bortoft 1996, p.22). This reinforces the important part which poetry can play. A holistic view of the human-animal relationship involves paying attention to the smallest of everyday interactions between the two.

Virgil is often said to have personified nature in the *Georgics*, because his treatment of the human-nature divide is ambiguous, but equally he can be seen as working with a holistic way of thinking. Crucially, a tacit, intuitive, rigorous, disciplined knowledge is achieved and expressed in the writing itself, as poetry. Not to present a utopian or sentimental world, nor to give simple solutions, but to acknowledge the patterns and qualities which are universal in nature.

We have already seen Virgil's use of the word *laetas*, is knowingly full of meaning. In Virgil's world, elms and vines are wed. There are many examples of this striking anthropomorphism. Virgil's worldview offers an active perception of wholes. The knowledge which he depicts does not just apply to humans and animals, it applies to fields, to crops, to trees, to bees, to the soil; they are given character, sentience, relationships, they all experience birth and death.

An early example of such personification or bond recognition is when Virgil writes on the propagation of plants, drawing on the mother and child relationship.

Firstly a variety of trees spread themselves  
naturally without man's planning at all.  
Of their own free will, they incline to the plains  
their tender saplings infiltrate  
the curve of the stream: the pliant spindle-tree,  
noble poplars, and grey-green fronded willows.  
Others also rise from scattered seed, that fathers  
the great woodland chestnut and Jupiter's oak  
and the oaks from which the Greeks read auguries.  
Some sprout densely along their roots:  
the cherry and the elm, whilst the laurel offspring  
take shelter under their mother's vast shadow.  
So Nature hosts her own possession  
thriving and fruitful, haunting the forests.  
There are other methods which man has learnt from experience:  
he has torn saplings from the mother's body  
to bury them in trenches, or he has buried bits of stem  
in the field, staked, after sharpening  
or scoring the ends in the shape of a cross.

2: 9-25

The human intervention in natural processes is presented here with ambiguity. At other times, the farmer's work takes on more of a nurturing role, for example saplings are to be trained in ground similar to that where they will ultimately be set so that their habits are well formed (2: 265-272). In the case of horses and cattle, Virgil describes the appropriate care at breeding time for the 'destined lord of the herd' (3:125) and also care for the pregnant dams, so that they may wander pregnant without being set into the yoke (3:141). Then his, and the farmer's, attention turns to the young calves, who must be trained and disciplined as if they were children (3:174-178).

After the birth, all tending shifts, to the calves.  
Immediately, they are to be marked,  
branded with their stock-names –  
those of wayward character to be reined in;  
those set apart for sacrifice to save us;  
those that will cleave the plains to clods of earth;  
to the rest are given pasture and herbs.  
For the long haul of field work ahead,  
the young are to be shaped from their raw state,  
tamed and encouraged, their spirits composed,  
all when they are tender, pliable and quick-witted.  
First hold their necks loosely bound in thin osier hoops,  
thus from freedom they slip into service.  
Tighten so they submit to the yoke  
and get their heads round taking gradual steps  
from there let them frequently draw empty wheels  
that hardly mark any trace into the dust.  
Later, powerful and sleek fastened to the beam  
of a creaking beech-wood wagon,  
side by side, they will haul brass wheels.  
Meanwhile, before they are docile adults,  
let them enjoy lots of grass, hand-picked willow leaves,  
reeds from the marsh, even corn,  
and don't as our foolish fathers did,  
exhaust the snow-white milk  
to overflowing pails, but let the calves  
suckle sweetness as nature intends.

3:157 – 178

This passage and many others in the *Georgics* are strikingly compassionate because of the connection with human emotional experience of common striving. Agriculture and ethics are so intertwined, and the results so finely balanced, that even the language echoes with responsibility. It seems important then to acknowledge that husbandry as a quest for balance raises the

same problems in every age: the need for and the limits of reductionism, the need and difficulties in perceiving wholes are Lucretian, Virgilian themes.

The closeness of farming families to their work, the continuity of species, connections between humans and animals are themes explored in the Aberdeen-Angus sequence of sonnets. On hearing these farmers describe their work, there is no doubt that the lives of their families and their animals are still as closely bound as Virgil would have described. The relationship between humans and nature is reciprocal. Also there are tensions in the farmer's work, the harsh realities, of managing natural events as well as achieving profit. Past years are known by the harvest which resulted, for instance 'the year of the short corn' (On Visiting the Aberdeen-Angus Society Headquarters in Perth). Human endeavour is perhaps born of the 'vanity' of imagining that humans are in control. Equally this gap between intention and real event is where the potential for creativity arises – 'reconciling what you could with what you had been given' (Extract from Breeding Notes) or the 'middle bit' which caves in (Birtie). The intention is shaped in the writing, just as pine cones may be arranged to stand for sheep (The Herd Sorts Pinecones, see Chapter 6). In a strange example of sympathetic magic perhaps, the more disconnected the technical scientific writing, the more disconnected becomes the actual science or agriculture.

In the following chapter we look at the especially close shaping of modern agriculture and science in the seventeenth-century Europe and the way in which the changes were reflected in writing on husbandry.

## **Chapter 4: The Good Husbandman**

- 4.1 The Husbandman as Individualist Improver
- 4.2 Thomas Tusser on Husbandry
- 4.3 Renaissance Husbandry
- 4.4 Puritan Husbandry

This chapter provides versions of 'Good Husbandry' – contrasting Tusser's literal and simplistic morals, with the yoking of opposites which Shakespeare's metaphoric use of husbandry epitomises. A third example of a Good Husbandman is Francis Bacon, whom I have characterised as a 'puritan' figure, for the purposes of comparison with other perspectives. His philosophies drove ideals towards early capitalism and modern science. In retrospect, an alliance between the values of profit, control and detachment seems to require a revised goal – a third place between complete domination and utter chaos, between objective fact and subjective 'lie', and between maximum profit and loss of everything.

Three of these poems: That the Attitude Influences the Result; Number, Weight and Measure and Evenings at the Microscope subvert the usual assumptions regarding objective quantitative knowledge and hint rather at the context of scientific knowledge. Number, Weight and Measure is an imaginary scenario involving Francis Bacon. That the Attitude Influences the Result is based on my own experience as a laboratory researcher. Evenings at the Microscope refers to an 1859 publication by Philip Henry Gosse who was a natural philosopher and a populariser of science, a contemporary of Darwin, who tried to reconcile nineteenth-century science with his fundamentalist Christian beliefs. His ideas were not widely accepted but his writings make interesting examples of anthropomorphism or the struggle to avoid it. Rose, Key and Ghazal for a Graduate were written to explore third places, to highlight gaps in conventional depictions, or to explore holistic views of nature as held, for example, by Goethe. A Ghazal is an Eastern poetic form, consisting of a refrain, an internal rhyme and self-contained couplets which are 'parallel' rather than linear in sequence.

Poems:

THAT THE ATTITUDE INFLUENCES THE RESULT  
NUMBER, WEIGHT AND MEASURE  
EVENINGS AT THE MICROSCOPE  
ROSE  
KEY  
GHAZAL FOR A GRADUATE

*Note: pages with poems have been removed for reasons of copyright.*

#### **4.1 The Husbandman as Individualist Improver**

In sixteenth-century England, patterns of land use, population size and food production altered dramatically as the feudal system gradually disintegrated. Between 1500 and 1660, in England, the population is estimated to have increased from 2M to 5M, despite outbreaks of plague, and crop failure and famine. During this period the prices of basic commodities soared by 600 percent (McRae 2002, p.12). Landed property of the church and the crown gradually moved into private ownership, on the strength of 'new' money from trading and professional occupations. The increasing cost of living put tenant farmers under pressure and early rural capitalism evolved as a political and sociological ideology which stressed the innovation of the individual and the importance of increased productivity. With movements such as early seventeenth-century land 'enclosure', the rights of individuals were prioritised over those communities. This led to depopulation of rural areas and, to some extent, the loss of traditional husbandry skills. Forests, fens and moors were described as or assumed to be 'wasteland' and were cleared for arable and pastoral use. Productivity was further increased by the cultivation of new crops, use of fertilizers, equipment and innovative methods. This process of agricultural revolution and the development of agrarian capitalism can be compared with the equivalent, though somewhat later, eighteenth century Scottish clearances.

The enclosure movement in England advocated the 'law of property' whereby a man should 'know his own' land. Not all politicians supported the enclosure movement and, most notably perhaps, Francis Bacon, in 1597, early in his political career, introduced bills against enclosure in the House of Commons:

for inclosures of groundes bringes Depopulacion, which bringes  
1. Idleness 2. decay of Tillage, 3. Subversion of howses and decrease of  
Charitie, and charges to the poores maytenance. 4. the Impoverishing of  
the State of the Realme.

(McRae 2002, p.9)

Sir Walter Raleigh presented the opposite view. In a debate in 1601, on the 'Sowing of Hemp' he stressed individual freedom in land use patterns: 'let every

Man use his Ground to that which it is most fit for, and therein use his own Discretion' (McRae 2002, p.11).

Gradually an individualist ethic of 'good exercise' and self-interest replaced medieval Christian ethic of the land as a commonwealth. Andrew McRae, who has thoroughly analysed the political and religious context of this period of agrarian change, explains:

As the individualist farmer was metamorphosed from a covetous canker on the body politic into a godly man of thrift and industry, the meaning of agrarian England shifted accordingly from a site of manorial community and moral economy toward a modern landscape of capitalist enterprise.

(McRae 2002, p.7)

The invention of the printing press must have exerted a profound influence, in ways impossible to catalogue. In Mid-tutor times, during the reign of Edward VI, a flurry of tracts and pamphlets were published, with various agendas regarding religious and social reform. 'Complaint literature' – didactic poetry, religious tracts, sermons, pamphlets and dramatic dialogues – railed against the enclosure of common land forests and wasteland. Protestant reformers preached against covetousness and continued to call for 'Possessioners' to distribute wealth. In earlier times, Wycliffe had made similar appeals to monasteries but as church lands were sold, wealth fell into the keeping of new Possessioners. Robert Crowley, a prolific Protestant reformist author and publisher, used the image of the body politic, that is, society as an organic unit which included both the rich and the poor. Each person was said to have a certain vocation or calling, but with reciprocal bonds of rights and responsibilities (McRae 2002, p.39). Crowley's book, *A Prymmer or boke of private prayer needful to be used of all faythfull Christaines*, contains a prayer for landlords, which encapsulates the general Protestant husbandry ethic of stewardship:

The earthe is thyne (O Lorde) and al that is contained therein, notwythstandynge thou hast geven the possession therof unto the children of men, to passe over the tyme of theyr shorte pylgremage in thys vale of mysery.



[...] geve theym grace also to consider, that they are but straungers & pylgremes in thys world havying here no dwelling place, but sekyngge one to come, that they [...] maye be content [...] and not joyne house to house, nor couple lande to lande, to the impovryshment of other.

Reynold Scot in 1574 published *Perfite Platforme of a Hoppe Garden*, with woodcuts, so that those who were illiterate could also benefit. Here covetousness is a vice: 'condemne the man, or rather the mynde that wresteth it to serve his miserable affaection or covetous humour' (McRae 2002, p.152).

Views on land ownership and social responsibility changed with the religious persuasions of the English monarchs, from Edward VII to Mary I, then Elizabeth I. During the reign of Elizabeth I, the ideals of husbandry were driven by developing notions of individualism and personal autonomy. Activities such as exploration, trade, and mining were highly valued and the vice of covetousness was gradually accepted as a natural driving force which would benefit a market economy. Significant shifts occurred in the agreed meaning and usage of words such as 'thrift', 'improvement' and 'utility'. The individual and godly gentleman was portrayed as one who strove towards Truth and Reason, taking a leading role in early agrarian capitalism. His work on the land was to be innovative, his endeavours were described in masculine terms and his goals were progress, improvement and productivity (McRae 2002, p.161). The concept of 'property' was evolving as a God-given right, protected by divine as well as natural law.

Profit, as translated from the Latin *utilitas*, had almost no financial implications, and in agrarian usage meant the yield from a harvest. However, in the mid-sixteenth-century the meaning became equated with finance. Profit also, in a subtle way, became the measure of a moral man, in whom God had 'entrusted' much. The earth was his own field, traditionally held in stewardship, but increasingly depicted as a possession to be improved and transformed. This attitude can be found in writings of agricultural reformers, political theorists, natural philosophers and early scientists. The role of man was to be a good husbandman of nature, even as God was the ultimate Good Husbandman (Wood 1984). The activity of husbandry was therefore both godly and gentlemanly and thoroughly anthropocentric. Robert Boyle wrote in *Some*

Considerations touching the Usefulness of Experimental Natural Philosophy  
(1663):

The earth produces him [man] an innumerable multitude of Beasts to feed, cloath, and carry him; of Flowers and Jewels to delight and adorn him; of Fruits, to sustain and refresh him; of Stones and Timber, to lodge him; of Simples, to cure him; and in summe, the whole sublunary World is but his Magazine. And it seems the grand business of restless Natures so to constitute and manage his productions, as to furnish him with Necessaries, Accommodations, and Pleasures.

(Wood 1984, p.58)

This quote nicely illustrates a general tenet of the modern philosophy: that nature is primarily for man's use. Also demonstrated, is the positivist attitude that the universe is structured in a rational way and can be objectively and empirically known (see Table 3.1). The assumption was that nature existed to provide for man's needs. This anthropocentric model brought responsibility as well as autonomy, it gave the freedom to act and the values to strive towards. These values were clarified, or assumed, in moral discourse concerning 'good' husbandry. In the discourse of agrarian improvement, qualitative changes were gradually conflated with increased financial returns, 'profit and pleasure' went together (McRae 2002, p.137). This perspective might be compared with earlier perspectives such as a medieval theistic view of nature, which although also hierarchical, held a sense of nature as intrinsically good (because created and sustained by God), therefore 'a real and fitting object of care and pleasure' (Taliaferro 2001, p.131). Such wider perspectives are also held in the Latin word *agricultura*, which undoubtedly included a dimension of functionality, but also aspects of ritual, festival, decoration, directed towards nature herself. This attitude allowed room for intrinsic worth of nature, independent of economic value.

The attitude towards nature generally also informs the attitude towards non-human animals. Some medieval sources, for example, readily grant intrinsic worth to animals, even viewing them as partners with humans in creation. (Salisbury 1994, Taliaferro 2001). Generally speaking, the philosophical human-animal relationship in modern philosophy reinforced a dichotomy: that

humans possessed 'reason' but animals and nature did not. The view of nature underwent a subtle yet important shift with the prioritisation of reason, parsimonious logic, and the link between labour, property, and responsibility, and economic profit.

In the following section, however, we will look at extracts from Thomas Tusser's populist writing on husbandry (1524 -1580), which can be used to identify the main themes in sixteenth-century understanding of the practice and concept. The influence of sixteenth- and seventeenth-century morals, as they became associated with husbandry, can be traced by comparing early and later editions of Tusser's work.

## **4.2 Thomas Tusser on Husbandry**

The most popular amongst sixteenth-century husbandry manuals was Thomas Tusser's didactic verse *A Hundredth Goode Pointes of Husbandrie* published initially in 1557. It delivered practical advice, mixed with maxims, proverbs, weather lore and customs. The original poem was written in quatrains of rhyming couplets, generally each line consisting of four anapaestic feet. The effect therefore is one of galloping dogma, even comedic. However, this style would not have been unusual for the time, nor would the strongly moralistic tone. Tusser's shrewd advice is firmly linked to the seasons, to the roles of both husband and wife, to virtues of thrift and common sense. Grigson, who edited an 1984 edition of Tusser's husbandry, notes that despite

awkwardness,...broken rhythm, bad grammar, abominable syntax, naivety... He is a generous writer, this man who loved husbandry, forcing himself to wrestle with the intractability of language.

(Grigson 1984)

Whilst other publications of the time, such as Conrad Heresbach's *Four Bookes of Husbandry* (1570) and Fitzherbert's *Boke of Husbandrye* (1523?), assumed a readership of gentleman landowners, Tusser's poem was intended for tenant farmers. The composition would have been relatively easy to read

and to memorise. This readership was highly significant because it transferred the new possibilities of improvement and individual enterprise to the common man, the small-holder (McRae 2002, p.146). Characteristically Tusser represents a simplistic worldview, and a straightforward ethic of cause and effect – one thing follows from another. General statements, proverbs and maxims are delivered with no room for debate, no specific individual examples, and no surprising turns of event. The ‘good labouring threshers’, ‘good husbandly ploughmen’, ‘good huswiuely huswiues’ are contrasted with ‘raskabilia’, ‘slouthfull’, ‘proloiners’ and ‘filchers’.

Good labouring threshers, are worthy to eate:  
Good husbandly ploughmen, deserueth their meat.  
Good huswiuely huswiues, that let for no rest  
Should eat when they list, and should drink of the best.

Beware raskabilia, slouthfull to worke;  
Purloiners and filchers, that loue for to lurke.  
And chreishe well wishers, that serueth thy need:  
Take time, to thy Tutor, God sende the good spede.

(Tusser 2003)

The July rhyme from 100 points advises:

Reape well scatter not, gather cleane that is shorne,  
Binde fast, shock apace, pay the tenth of thy corne.  
Lode saife, carry home, lose no time, being faier;  
Goife iust, in the barne, it is out of dispaier.

(Tusser 2003)

Tusser trained as a singer at St Paul’s cathedral, Cambridge, then worked as a farm manager. He was unsuccessful in this enterprise and died in prison in 1580, in debt: ‘a failure, a floater...a renter who impoverished himself and never enriched his landlord’ (Grigson 1984). However, his manual sold remarkably well. He extended the work to include A Hundreth Good Poynts of Huswifery (1570), then in 1573 to Five Hundred Goode Points of Husbandry, which was

reprinted six times in the last seven years of Tusser's life (Grigson 1984). Perhaps it is due to the pace of the metre, or our retrospective knowledge of his ultimate failure as a farmer, that Tusser's tone seem tainted with desperation, or as McRae puts it, his writing has a 'truly disquieting intensity' (McRae 2002, 203). Tusser had experienced the fine line between survival and destitution. Chapter 6 of Five Hundred Goode Points reads:

*Let house have to fill her,  
Let land have to till her,*

No dwellers, what profiteth house for to stand?  
What goodnes, unoccupied, bringeth the land?

*No Labor no bread,  
No host we be dead.*

No husbandry used, how soone shall we sterve?  
Housekeeping neglected, what comfort to serve?

*Ill father no gift  
No knowledge no thrift.*

The father an unthrift, what hope to the sonne?  
The ruler unskilfull, how quickly undonne

(Tusser 1984, p.11)

As McRae points out, the significant changes in the 1573 edition show the cultural shifts in agrarian economics and virtues (McRae 2002, p.146). The calendar year, for example, shifts from an August beginning ('when harvest is done, all thing placed and set') in the first edition, to September and Michelmas, when tenure would have been renewed or changed. Tusser seemed increasingly to favour enclosure. Two examples of the enclosure catchphrase are from Five Hundred Goode Pointes: 'to save to be suer thine owne' (5:20) (Tusser 1984, p.10) and

Againe what a joie it is knowne,  
When men may be bold of their owne.

(Tusser 1984, p.138)

It is also notable in the above, Chapter 6, that the land brings no goodness unless it is occupied. Tusser's husbandry contains little leisure, despite his 'pleasure and treasure' rhymes. It is a striving for survival. Nature is not represented as bounteous, nor beautiful. Her presence is implied in his use of the months of the year as a structuring device and the basis of social bonding, whereby advice was linked to seasonal necessities and celebrations. Hard work is necessary at all times in order to keep 'the wolf from the door'.

Tusser became increasingly obsessed with economic advice – his rhetoric centred around thrift in the later editions. Chapter headings and phrases include: 'The Ladder to Thrift', 'The Commodities of Husbandrie', 'theeves to thrift', 'friends to thrift', 'enemie to thrift', 'sixe noiaces to thrift' (one being 'hogs that eate fowles!'), 'spoilers to thrift', 'thrifths auditor'. It is also possible to see a transition from the general classical notion of *utilitas* as profit, advantage, and benefit, to the new meaning, associated simply with financial profit. There are frequent mentions of the purse, of borrowing and lending customs, of neighbourly conventions, for example from Chapter 10 of the later edition:

Be pinched by lending for kiffe nor for kin,  
Nor also by spending, by such as come in;  
Nor put to thy hand betwixt bark and the tree  
Least through thy owne follie so pinched thou bee.

As lending to neighbour in time of his neede,  
Winnes love of thy neighbour, and credit doeth breede,  
So never to crave but to live of thine owne,  
Brings comforts a thousand, to many unknowne.

(Tusser 1984, p.18)

Increasingly stressed is the need to keep a tight control of boundaries, for a husbänder to know and to be in charge of his own, not to be dependent on

others. Only a fool, for example, lends his working tools. Security is a constant concern:

Make cofer fast locked, thy treasure to keepe,  
Make house to be sure, the safer to sleepe.

(Tusser 1984, p.17)

As McRae points out, Shakespeare, who would have known Tusser's writing, had Lord Polonius, in *Hamlet* (1603), pick up this thread in the famous saying:

Neither a borrower nor a lender be,  
For loan oft loses both itself and friend,  
And borrowing dulls the edge of husbandry.

I,iii (Shakespeare 1986)

Tusser frequently defined the relative, balanced roles of husbandman and of housewife, for example, from the prologue of *One Hundredth Good Pointes*:

Housekeeping and husbandry, if it be good:  
must love one another , as cousinnes in blood.  
The wife to, must husband as well as the man:  
or farewell thy husbandry, doe what thou can.

(Tusser 2003)

There is a glimmer of awareness of the poetic possibilities of the husbandry metaphor, in Chapter 3, but it fades fairly rapidly:

that husbanderie  
with huswiferie  
as cock and hen,  
to countrie men,  
all strangenes gone,  
might joine in one,  
as lovers should.

(Tusser 1984, p.7)

However, it is precisely this poetic potential that was previously exploited by Chaucer and later seized upon by many later poets, most notably Shakespeare, but also John Webster and Ben Jonson, while writing on georgic themes or to explore society generally.

Tusser's attitude towards animals was kindly. They were an integral part of the households which he described and were to be cared for reciprocal reasons:

When pasture is gone, and the fildes meit and weate:  
Then stable the plough horse, and there geue them meate.  
The better thou vse them, in place where they stande:  
More strength shall they haue, for to breake vp they lande.

December, 38

A kow good of milk, big of bulke, hayle and sounde:  
Is yearly for profet, as good as a pounce.  
And yet by the yeere, have I proued ere now:  
As good to the purse, is a sow as a kow.

January, 56

(Tusser 2003)

Various scholars have studied the social and political changes which led to a revision of the concept of stewardship whereby it was aligned to an ethic of moral economy. The societal and political shifts, as they related to husbandry, are thoroughly examined by McRae and others (Bending and McRae 2003, McRae 2002). The one-dimensional, simple ethic of mid-Tudor complaint, with clear polarities of virtue and vice, is epitomised by Tusser. However, there was opposition to enclosure and to the intensifying of land ownership. There were historical characters such as the seventeenth-century Gerard Winstanley, who had a vision of agrarian communism and the abolition of property. In the Renaissance period, however, patterns of land use continued to develop in



association with early capitalist enterprise, in a spirit of exploration and colonisation, in keeping with political, sociological and economic events.

### **4.3 Renaissance Husbandry**

A simple treatment of the downtrodden ploughman gave way to a more complex discourse in the Renaissance period. The simple moral values as epitomised by Tusser also gave way to a modern moral intelligence. In Renaissance satire, for example, the ploughman was just as likely to be depicted as a 'corn-hoarder' or as a mistreated tenant (McRae 2002, p.88). Whereas literature had previously depended on aristocratic patronage, writers and their work became influenced by the market that was developing as a result of urbanisation, printing, and early capitalist enterprise. A revisiting of the Greek and Roman classics led to a rediscovery of a complexity of viewpoints. For example, the Virgilian pastoral was newly appreciated as a way of depicting certain idealistic perspectives, not least because of the new notion of 'landscape' as something to be owned and shaped (Schmidt 2002). The animistic perspective of Virgil simmered underneath early Romantic personification of the land as a living being. The poetic value of the ancient myths and pagan dieties was newly appreciated and emulated, even, uncharacteristically, by Tusser. He reinterpreted, only for a single mention, Ceres, as the goddess of Husbandry and Pallas, 'the Goddess of wisdom and cunning' (Tusser 1984, p.5).

Early English translations of Virgil's *Georgics* were made by Abraham Flemming in 1589, Thomas May (1628), and John Ogilby (1649). It is suggested by McRae that, at this period, the *Georgics* did not sit easily with the prevailing tradition of 'courtly ideals and pastoral ease' (McRae 2002, p.212). McRae makes a connection between the Protestant work ethic and the tradition of georgic writing. Only with the evolution of early capitalist individualism did readers fully enter into the Virgilian spirit of labour. This coincided with Dryden's famous and very English translation of Virgil's *Georgics*.

The ploughman, or husbandman, is often used as an Everyman figure – historically he has provided a focus for many causes. The husbandman,

situated in his work-station and vocation, can represent a conservative and fixed hierarchical order. He may also suggest the possibilities of revolution, striving towards improvement in status and wealth. He can signify a holistic relationship between humans and the land and between the rich and the poor, as mediated by the commonwealth of the land. He can represent an Epicurean ideal of contentment or the Baconian urge of the empirical scientist to effect agricultural revolution. He can also be the poet who cultivates words. There is an early and continuing tradition of the herdsman or ploughman as poet, one who is visited by the muses, for example Caedmon, the first Anglo-Saxon poet. In that tradition the poet was more likely to praise God than to praise his own work.

The georgic tradition has frequently been connected with God or the gods, and consequently with underpinning moral values. Sometimes these are delivered overtly, as we saw with Tusser, sometimes more subtly implied in keeping with a certain 'spirit of the age'. Although Tusser mentions two Roman gods associated with husbandry, his moral authority throughout his writing is the Protestant God. Francis Bacon appeals to the same monotheistic authority. There are two underlying themes – firstly that of the stewardship of nature as man's responsibility, secondly an implied belief that improvement of nature is a way of redressing 'the fall' after Eden. Much of Bacon's rhetoric is about the discovery of a New Atlantis, the wisdom of Solomon, and the secrets or occult aspects of nature.

Translations of Greek and Latin classics are inevitably flavoured by the historical and cultural context. Hesiod's *Works and Days* was translated in 1618 by George Chapman, who dedicated his translation to Frances Bacon himself. The title page of this translation reads: *The Georgicks of Hesiod, containing doctrine of Husbandrie, Moraltie and Pietie*. Chapman's explanatory marginalia emphasise the financial benefits of husbandry, in that the husbandman may 'become Herd-full and rich'. Joseph Addison, in a 1597 introduction to Dryden's seventeenth-century translation of Virgil's *Georgics*, wrote:

A georgic ... is some part of the Science of Husbandry put into a pleasing dress and set off with all the Beauties and Embellishments of Poetry.

(McRae 2002, p.212)

So he sparked, it is said, the great tradition of formal georgic poetry in England. McRae juxtaposes this with a contemporary definition of the georgic genre by Anthony Law:

a mode that stresses the value of intensive and persistent labour against hardships and difficulties.

(McRae 2002, p.199)

This is a mould into which Tusser better fits. Law's definition allows us to recognise a georgic strand in sixteenth- and seventeenth-century Christian reform and in the developing scientific movement. These developing discourses allowed a new appreciation and a new twist in the translations of Virgil's *Georgics*. Just a generation after Tusser, Shakespeare frequently used the idea and ideals of husbandry, but he was thoroughly aware of the limitations of any didactic morality. Shakespeare delighted in 'misusing' the conventional terminology, morals and associations of stewardship, such as profit, usury, increase. He thoroughly exploited ambiguities, double meanings, the juxtaposition of opposites, whereby 'reason was disconcerted'. A few phrases from the early sonnets show this playfulness: 'a famine where abundance lies' (1:7), 'thy self thy foe' (1:8), 'tender churl, makest waste in niggarding' (1:12) 'to give yourself away keeps your self still' (16:13). (Shakespeare 2002, p.383,413)

They lived only a generation apart, yet it is hardly fair to compare the genius of Shakespeare with Tusser, the versifier and failed farmer. But good husbandry was a sixteenth- and seventeenth-century obsession and this is what fleetingly unites them for the purpose of this thesis. Yet, their use of the word, concept and metaphor of husbandry is indicative of the great divide between simple puritan ideals and the many-faceted complexity of the Shakespearean vision.

Jonathan Bate, in *The Genius of Shakespeare*, outlines the role of the twentieth-century poet and critic William Empson in explaining Shakespeare's use of ambiguity. This aspect of Shakespeare's work was recognised, in part

because Empson was well-read in relativity and quantum theory. This enabled him to connect the newly recognised principle of uncertainty with Shakespeare's use of language. Empson classified seven types of ambiguity in use by Shakespeare from the first type of one word having multiple meanings through to the seventh type, a paradox of opposites. 'The idea of opposite is neither an old nor a necessary conception' (Bate 1997, p:310). Empson explained that ambiguity does not occur in nature, but is a human invention to overcome an intellectual difficulty. Empson

became the first man to see the literature of the past through quantum theory's altered notion of reality. He was able to think in terms of both/and.

(Bate 1997, p.315)

This skill he recognised in Shakespeare who, in the middle of the intense intellectual and practical conflicts, wove the dilemmas into words which held many interpretations and teased with various interactions. The lives which Shakespeare represented dramatically thus expressed 'the buried conflict of the whole population':

the all-inclusive scope and inexhaustible, rooted depth of his vision was drawing... not on any particular part of his audience but on all of it simultaneously.

(Hughes 1992, p.139)

The innocence of a simple either/or reality which had been opened to question in Renaissance times, was challenged in twentieth-century physics. The implications of these 'both/ and' discoveries follow right through to the use of any single word. As explained in Chapter 1, one word opens many interpretations and worlds of possibilities, particularly if chosen and placed meaningfully, symbolically, ambiguously.

In the 'husbandry' sonnets, Shakespeare writes of nature as an active entity, she 'gives and takes'; she 'lends freely'...of her 'beauteous largess'. Time and

the grave are the things to husband against, by breeding (and by writing). Shakespeare had a completely different remit, genius and longevity from Tusser. He was using husbandry because of the punning and philosophical potential, urging his addressee to husband a wife and to father a child. Here, reproduction was stated as the moral imperative, in order to preserve 'beauty's rose'. There is, therefore, no urge towards individualism, rather it is the husbandry relationship which is crucial. By Sonnet 13, (line 14) the theme develops towards a much more complex relationship between the lover and the beloved. The poetry becomes enough, the consolation of this art 'so long lives this and this gives life to thee' (Burrow 2002, p.407).

Sonnet 8 is a clear example of Shakespeare's use of husbandry, as a metaphor for the married union of the whole. There is an echo of Virgil, in line 5, with the same understanding that husbandry is song: the 'concord of well-tuned sound':

Mark how one string, sweet husband to another,  
Strikes each in each by mutual ordering;  
Resembling sire and child and happy mother,  
Who all in one, one pleasing note do sing:  
Whose speechless song, being many seeming one,  
Sings this to thee: thou single wilt prove none.

lines 9-14 (Burrow 2002, p.397)

To remain as a single bachelor, to fail to blend into harmony, would be to fail to produce anything of value – 'One is no number' (Burrow 2002, 396). To be single, detached and dissociated, is to amount to nothing. This was the motto of Shakespeare's genius – to sound harmony by tuning multiples – many characters, many perspectives, many possible readings, in his play and poems. He held, and his works continue to hold, the multiple meanings in one line, in one word. As the poet Ted Hughes said of Shakespeare's verbal devices and double language: 'he oxygenates his work with 'and' and so yokes the unexpected, even opposites' (Hughes 1992, p.133). Husbandry is marvellously juggled in the sonnets and this is precisely the ongoing challenge for any husbandry; to sound it as harmony. The poem Rose of this chapter is a response to these Shakespearean ideas.

It is possible to learn from Shakespeare that husbandry cannot be driven by a puritan, single definition of Good Husbandry. After Shakespeare, it is simply not tenable to insist that language gives a one-dimensional representation of truth, neither the language, nor his works will allow it. There is a comparison to be made with science, as Bate has done. After the development of quantum theory, it is not possible to insist on certainties:

Erwin Schrödinger demonstrated mathematically that a hydrogen atom may have two energies at once, something impossible under previous atomic theory; William Empson demonstrated critically that a text may have two contradictory meanings at once, something impossible under previous literary theory.

(Bate 1997, p.315).

Bate is careful to point out that a post-modern 'dissolution of opposites' does not mean that everything is relative, he draws his analogy from science. Just as the velocity of light is the absolute in science, so, he suggests, the genius of Shakespeare is the literary-theoretical absolute. An either/or reading of nature is not now, and never was, the only type of logical understanding. There is a 'third place'. We cannot predict nor be in control of natural events. Nor can we define an ultimate 'good' husbandry. According to a complex Shakespearean and Virgilian understanding, a 'good husbandman' is not good in any ethically pure way. He is not an individualist, rather he sings in harmony with nature. He is open to many perspectives apart from his own, we could say that he possesses Keats' negative capability. But this poetic insight is not new; it has already been used to write both husbandry and science as literature. In the following chapters, we return to Virgil and Lucretius, to seek something of their understanding of the complexities which are also our challenges in writing husbandry. Before these chapters, however, it is necessary to revisit the associations between quantitative empirical science, and Renaissance agriculture.

#### 4.4 Puritan Husbandry

As the new inductive and empirical scientific methods developed, changes occurred, so that rational knowledge became increasingly focused on the deductive and mathematical. An example is drawn by McRae from the invention of the 'surveyor'. Surveying, the logic of land measuring, was promoted as a crucial activity, so that a landlord may 'know his own'. The earliest English printed manual on surveying was John Fitzherbert's *The Boke of Surveying and Improvements* (1523), a companion to his *Boke of Husbandry*. Fitzherbert introduced the idea that prudent improvement depended on 'parfyte knowledge' of the extent, nature and value of resources' (McRae 2002, p.174). This knowledge was based on the economic value of the land and there was an ever-increasing need to manage estates efficiently, since both the population and inflation continued to rise. Marshlands were drained, hedges set, land was manured and livestock selectively bred, all with a view to increase productivity and to cut costs. There was a fierce competitive pressure on sixteenth-century yeomen, 'fermors to gentlemen', to specialise and invest profits, through industry and shrewdness. 'The Genius of this Age is very much bent to advance Husbandry', wrote one commentator (Wood 1984). Older intuitions of husbandry as a complex, nurturing, and symbolic relationship were gradually given a rhetorical twist towards advancement, improvement, and progress. This was part of the wide social shift in Europe towards the 'Enlightenment' and the evolution of modernity.

The old social order and morality was gradually replaced by new standards of knowledge and reason (McRae 2002, p.177). In this 'new world', older received ways of knowing such as myth-making, seasonal ritual, and poetic wisdom were viewed as luxuries or quaint distractions, or even dismissed as superstitious, time-wasting, unproductive activities. However, the truth is undoubtedly more complex than a sudden shift from one way of knowing to another. Residues from religion (e.g. Protestant reformation), magical practices, occultism, and alchemy ('Renaissance Neo-Platonism') are all fascinatingly present in modern science. But the values of 'good' husbandry were also those adopted in the development of modern science, i.e. a focus on quantitative, objective measurement, and a belief in the importance of

innovation and progress. Even the concept of enclosure can be seen as a motif which prefigures the scientific, controlled experiment – the drawing of clearly delineated boundaries within which manipulations can be made and measurements taken. An important figure in the development of early modern philosophy, John Locke, articulated a labour-centred concept of property: ‘As much land as a man tills, plants, improves cultivates and can use the product of, so much is his property’ (Taliaferro 2001, p.139).

Some indications of the historical factors which gave rise to the emergence of the scientific movement and ‘new’ seventeenth-century ideals of husbandry are provided by the politician and essayist Francis Bacon. I have selected Bacon to represent certain ideals of a ‘good husbandman’ because he portrays an early modern attitude towards truth. His view of the human-nature relationship is notorious and he illustrates early capitalism very clearly, in retrospect. But Bacon is by no means the only Renaissance politician, poet or philosopher who had something to say on the matter. It is inevitable that we encounter Bacon’s work as readers who are outside his own historical context and with a great deal of hindsight. He writes on the cusp of a profound shift in European society. Through his writing we can also see certain metaphors which persisted as clichés in a rhetoric of scientism, which originated from a belief in the occult aspects of nature, the anthropocentric, revelatory goals, and the divine right of humans to ‘improve’ nature. To a twenty-first-century reader, however, Bacon’s essays are complex, muddled affairs and one suspects that to isolate quotations from them to is lose something of his strange overall vision. Also Bacon himself was prone to ‘versioning’ classical authors, including Virgil and Lucretius and to quoting from them out of context.

As mentioned in Section 4.1, Francis Bacon had been associated with a conservative stance against enclosure. This is somewhat strange perhaps, since enclosure is symbolic of one of the key changes which shaped science as a process of possessing and controlling nature. However, Bacon was notoriously ambitious and his political alliances, and opinions reflected this, as did his ultimate loss of fortune. Although he was said to be ‘singularly out of touch with the actual discoveries of his time’ (Matheson and Matheson 1924) and he himself expressed a suspicion of language, it was his essay writing and his articulation of the principles of empirical knowledge which forged his legacy. In *novum organum*, (or True Suggestions for the Interpretation of Nature) 1620,



he pioneered the use of experimentation and inductive reasoning, rather than an unquestioning acceptance of the knowledge of the ancient philosophers (Bacon 1863). His pioneering work, ironically perhaps, was achieved by rhetoric, rather than actual scientific practices.

Truth, Bacon repeatedly asserted, did not rest on the sayings and 'idle thoughts' of earlier philosophers, but on experimentation. Consensus was to be reached on 'the coincidence of free judgements after examination'. A main difference between these ideas and earlier scientific thought was the active role of the experimenter. In *The Advancement of Learning*, Bacon translated and quoted Lucretius. The poem of *de rerum natura*, book 2, is part of his promotion of the truth which could be reached with new empirical methods:

It is a view of delight to stand or walk upon the shore side, and to see a ship tossed with tempest upon the sea... it is pleasure incomparable, for the mind of man to be settled, landed and fortified in the certainty of truth; and from thence to descry and behold the errors, perturbations, labours and wanderings up and down of other men.

(Bacon 1998)

The interesting thing about the passage is that, because the Latin poetry is so precisely ambiguous, it could be translated in a number of ways. For example, my version below becomes:

How lovely it is, to watch the turmoil of the wind  
and sea, all great troubles and labours,  
from another place. Not that you would smile  
at anyone's distress, for you can hold no spite,  
discerning only sweetness. It is also good to scan  
the field of action, confident that you are  
well-equipped for any contest –  
the wisdom of your teachers proves to build  
your strong defence, your safe haven.  
You can look from there and all you see below  
are paths of broken fragments, little ravings –  
public lives contesting greatness, ingenuity.

The light of day exposes all the harm that battle  
causes and the one who holds the highest rank  
begins by seeking hidden power in things.  
O miserable intellects, O broken hearts!  
what shadowy trials eat away your life-spans.  
Do you not see how nature herself howls  
for nothing less than her body to be free  
of pain so that her mind can delight  
in fruitfulness, rather than anxiety.

2: 1-19

The section calls for enlightenment by contemplation, to watch from a distance the 'empty frenzy' of men and their battles (Fowler 2002, p.57). The observer is safe in the sublime *templa serena* of the wise (2: 8). The metaphors for man's fruitless activities (armies at battle and sailing in stormy seas) are picked up by Bacon. Melville translates line 11, *certare ingenio, contendere nobilitate*, as 'the clash of intellects, the fight for honours, the lust for wealth' (Melville 1997, p:36). *Contendere* is cleverly placed close to *certare*, certainty or truth is the object of contention. Lucretius and Bacon share a certain evangelical attitude in their calling for renewal in the study of nature – for Bacon it was empiricism and truth tested by trial and error, for Lucretius the truth was hidden in things and acquired by contemplation.

Recalls to nature, to natural philosophy, to the common senses, seem to be periodically required. Interestingly, in her study of ritualism and secularisation, Mary Douglas characterises alienation from the current social values (in various times and societies) as a denunciation of ritualism, where ritualism is defined generally as communication by means of complex symbolic systems (Douglas 1973, p.40). Concurrent with secularisation, is a turning away from set rituals, the exaltation of inner experience, a preference for intuitive and instant forms of knowledge, and a rejection of mediating institutions. In this patterning, Lucretius, against the religious bonds of his time, belongs with Bacon and the Protestant reformers and 'Enlightenment' scholars of Europe.

Lucretius' version of good husbandry rested on the calm waters of a frugal life and a quiet mind. This is where the Baconian project and Epicureanism part

company. Further, Bacon's views were not as secular as those of Lucretius, since his enlightenment aim was to seek truths hidden in nature, which would point to the Divine. To gain access to the ultimate 'Good' would be to achieve God-like power over nature. As mentioned already, there is an interesting association between early modern science and Renaissance occult philosophy. There is some continuity between Bacon's New Atlantis and the aims and beliefs of the Rosicrucian and Christian Cabalist movement (Yates 1979). This is a surprising link given the subsequent secularisation of the scientific method. Yet a striving towards secret knowledge of universal harmonies, and to exert influence on courses of events, was the motivation of Baconian science. Knowledge was believed to conform to a hierarchical order. At the lowest level sat the physical or natural, which in turn gave insight into mathematic truths, which in turn allowed knowledge of the divine. In conjunction with this belief, and quite distinct from the wisdom of the classical Greeks, Romans and the medieval European tradition, was the will to intervene in nature. This key change can be traced in varieties of Renaissance magic, from relatively tame, sympathetic, 'natural magic' to more extreme fascinations and invocations. One of Bacon's stated aims in *The Advancement of Learning* was to save 'natural magic' from vanity and superstition, towards 'true and fruitful' knowledge of cause and effect (Bacon 1998, 2:vii). He also famously wrote in *novum organum* (1620):

Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule.

(Bacon 1863, 1:iii)

In Bacon's opinion, theories of sympathies and antipathies were 'idle and slothful', seeking 'admiration and novelty' rather than 'utility and fruit' (Bacon 1863, 1:lxv). Vanity and superstition for Bacon also includes poesy/poetry, 'being as a plant that cometh of the lust of the earth, without a formal seed, it hath sprung up and spread abroad more than any other kind' (Bacon 1998, 2:iv:1). Also vain is the imagination, which 'may at pleasure join that which nature hath severed, and sever that which nature hath joined' and the senses. In summary of these attitudes, I have termed Bacon 'a puritan' (see Table 5.1).

In his aphorisms, Bacon called repeatedly for the inquisition of truth. Truth, he explained, does not consist of the idle professorial disputations of the Greeks, rather it is to be to be recognised in 'fruits and works':

Of all signs there is none more certain or noble than that taken from fruits. For fruits and works are as it were sponsors and sureties for the truth of philosophies.

(Bacon 1863, 1:lxixiii)

Bacon explained that, as faith is to religion, so are fruits to philosophy. Any philosophy which proved barren was frivolous and, even more so, if it bore thorns and briars of contention. Therefore, the 'new science' of the 'new' world was to focus on knowledge in 'black and white' and on measurable fruits of success. This attitude, in conjunction with the political and sociological climate mentioned above, directed Enlightenment based on rational innovations, to be recognised in progress and productivity. There is no ambiguity in Bacon's understanding of nature:

For what is founded on nature grows and increases, while what is founded on opinion varies but increases not.

(Bacon 1863, 1:lxixiv)

The metaphor of knowledge as a growing increasing fruitful plant is important. Systems and sciences which remain 'attached to the womb of nature' have in them 'a breath of life, at first rude, then convenient, afterwards adorned and at all times advancing.' (Bacon 1863, 1:lxixiv)

As we have already seen, and there are many more examples, Bacon's most damning of criticisms, used for both Elizabeth I and for poetry, is to dismiss something as infertile.

The influence of Francis Bacon on the subsequent development of science was extraordinary. He is said to have caused a 'widening' of nature, but a narrowing of what constituted 'truth' (Hansen 1975). Bacon explained that 'nature' includes all phenomena, God and the ultimate Good (and the activities of man

in seeking this) are apart from nature. His justification for the new knowledge was God-given:

Only let the human race recover that right over nature which belongs to it by divine bequest, and let power be given it; the exercise thereof will be governed by sound reason and true religion.

(Bacon 1863, 1:cxxxix)

We have seen that, in ancient Epicurean philosophy, there was no notion of experimentation, nor was there an ethic of improvement of nature. The Epicurean dream was contentment in the here and now. In Bacon's universe man's role was interventional, in keeping with his dominant place in nature and in his emulation of a monological God. God was, in turn, envisioned as the ultimate Good Husbandman. We have now gathered the principles of Baconian husbandry, in the metaphorical sense of husbandry as relationship between heaven and earth, as relationship between truth and fruit, and as relationship between man and nature. We can also infer the ideals of Good Husbandry in the Baconian universe from his 1627 (unfinished) descriptions of the New Atlantis (Bacon 1924). Husbandry is, after all, the process of managing a household. Bacon writes of the New Atlantis, his fictitious Bensalem, that it is a peaceful, benevolent country. In his allegory, a ship's crew of men are cast on land and find its people to be full of Christian piety and humanity. Especially important in this land is 'Salomon's House', a seat of learning with different domains of 'experiments', 'coagulations', 'isolations', 'refrigerations', 'conservations'. There are chambers of air, lakes, rocks, caves, wells, rivers, orchards, gardens, trees and flowers but this is no original Eden. Rather, by their arts and sciences, the scholars interpret and improve. There are engine houses and a mathematical house and

houses of deceits of the senses, where 'all feats juggling, false apparitions, impostures and illusions and their fallacies are represented.

(Bacon 1924, p.158)

Clearly we can read the general distrust of the senses and firm belief in mathematical measurement and rules of 'cause' and 'effect'.

As Bacon details the roles involved in Salomon's house, it is possible to recognise the cyclical process of scientific investigation, described in terms of nautical exploration, and mystical knowledge. 'Merchants of Light' sail into foreign countries and collect books, abstracts, and patterns of experiments. 'Depredators' and 'Mystery men' also collect experiments from books and from 'mechanical arts' and 'liberal sciences' and other practices. 'Pioneers' or 'miners' try experiments which they think good. 'Compilers' draw up tables and axioms of these results; 'dowry-men' determine useful practical benefits. As a consequence of consultation, 'Lamps' devise new experiments of a 'higher light' which Inoculators then execute. Finally, greater observations, axioms and aphorisms are made by the 'Interpreters of Nature' (Bacon 1924, p.159). What was the ultimate aim of these enterprises?

The end of our foundation is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of the human empire, to the effecting of all things possible.

(Bacon 1924, p.154)

This aim of science to control, even to influence natural events, is not the only sort of scientific approach. Nor does this ideal necessarily reflect the realities of scientific research. An alternative scientific method was suggested, for example, by the nineteenth-century poet/scientist Goethe who called for a 'delicate empiricism' which was less interventional. Therefore several of the poems of this chapter have come from my understanding of Goethean holism, via the writer Henri Bortoft (Bortoft 1996). Here I am exploring third places – symbolised by a lift stuck between floors (Number, Weight and Measure), the space between castanets, an extra new colour for the light spectrum (Key). Ghazal for a Graduate is a catalogue of third places (between East and West, subject and object, knowing and knowing about), based on sensory engagement.

We have seen that Bacon was suspicious of the evidence of the human senses:

Substance, Quality, Action, Passion, Essence itself, are not sound notions; much less are Heavy, Light, Dense, Rare, Moist, Dry,

Generation, Corruption, Attraction, Repulsion, Element, Matter, Form and the like, but all are fantastical and ill defined...Our notions of less general species as Man, Dog, Dove and immediate perceptions of sense, as Hot, Cold, Black, White do not materially mislead us, yet even these are sometimes confused by the flux and alteration of matter... All the others which men hitherto adopted are but wanderings, not being abstracted and formed from things by proper methods.

(Bacon 1863, 1:xv:xvi)

Here is a sharp contrast with the ancient Epicureans who held sensory evidence to be as valid as intellectual reason. In an ironic play, Bacon asserts his sceptical attitude towards sensory evidence, in a metaphoric language of misplaced wandering taken from *de rerum natura* (book 2). This censorship of the senses became a criterion of the 'proper scientific method' which favoured numerical measurements, as an encoding of universal harmonies.

Also, despite his writing of aphorisms and essays, Bacon did not trust words. They were, he argued, symbols of notions and the notions themselves were 'confused and overhastily abstracted from the facts' (Bacon 1863, 1:xiv). The first 'distemper' of learning, he asserted, occurs where men study words instead of matter. 'Words are but the images of matter', worthless in themselves. Bacon enjoys classical illusions, and as Lucretius does, he sometimes invokes in order to discredit: to fall in love with words themselves is to fall in love with a picture, to be like Pygmalion, falling in love with Galatea (Bacon 1924, p.112).

Bacon's new method of gathering empirical evidence based on 'number weight and measure' was promoted by the Royal Society and was applied in the study of animals and plants, minerals, astronomical bodies, geographical features, diseases and anatomy (Wood 1984). Robert Boyle (1627-91) was one of the leading proponents of this method and he was mentor and friend to John Locke, the philosopher (Wood 1984, p.25). In early modern economics, therefore, both Locke and William Petty (who published in 1662 *A treatise of Taxes and Contributions*) adopted Bacon's approach. Locke wrote in a 1668 Memorandum:

The Method I take to do this, is not yet very usual; for instead of using only comparative and superlative Words and intellectual Arguments, I have taken the course (as a Specimen of the Political Arithmetick I have long aimed at) to express myself in Terms of *Number*, *Weight*, or *Measure*; to use only Arguments of Sense, and to consider only such Causes, as have visible Foundation in Nature; leaving those that depend upon the mutable Minds, Opinions, Appetites, and Passions of particular Men, to the Consideration of others.

(Wood 1984, p.36)

This focus on number, weight and measure was used to reinforce the view that nature's workings obey certain laws which can be known and measured mathematically. This concept has metaphysical roots in neo-Platonism. This route to knowledge had the consequence of giving quantitative measures more intellectual value than qualitative, sensory experience. Modern economics, science, agriculture and industrialization all operated on these principles of numerical examination. Examination is another word which earlier had wider possibilities: to test, to weigh up, to ponder, to consider. The phrase 'number, weight and measure' quoted by Locke from Petty's preface, in turn, came from Bacon's *novum organum* (xcviii). However, it originates from the poetry attributed to the Wisdom of Solomon (part of the Old Testament Apocrypha of Protestants). The phrase was used throughout medieval times to signify the divine order of the universe. Bacon was indicating that this new empiricism was sanctioned by God himself, or that such methods gave access to Godly knowledge:

Even apart from these, men could fall at a single breath  
when pursued by justice  
and scattered by the breath of thy power.  
But thou hast arranged all things by measure  
and number and weight.

For it is always in thy power to show great strength,  
and who can withstand the might of thy arm?



Because the whole world before thee is like  
a speck that tips the scales,  
and like a drop of morning dew that falls upon the ground.

20: 20-22

This is a good example of the way in which older ideas were reinterpreted in the Renaissance period. The Protestant reformation was not the only influence. We saw that Bacon was also happy to quote Lucretius for his purposes. The Renaissance period brought renewed interest in nature herself and a process of Christianising earlier superstitious paganism or magic (Yates 2002). This renewed interest in the 'workings of nature' is certainly present in Bacon's development of scientific processes, along with the alignment of man's activities as God-given responsibility and a scale of values dependent on the classification of good and bad, appropriate and inappropriate. Table 4.1 attempts to summarise the universe as portrayed by Bacon and the subsequent modern view. This summary is, to some extent, open to debate because Bacon's intentions can only be surmised in hindsight, and he would not entirely have approved of the modern vision which unfolded, one suspects! The table will be extended in Chapters 5 and 6 to compare with Lucretius' universe and that of Virgil. I have tagged Bacon as 'a puritan' because his approach explains, at least in part, why the scientific method and Puritan Protestantism are similar. Both tend to seek certainty and to reject symbolism or fluidity of meaning. Both philosophies are suspicious generally of bodily, sensory experience. In Number, Weight and Measure I have trapped Francis Bacon and my mother in a lift, because I have often noticed that my upbringing, particularly on my mother's side of the family, tallies strangely with the fundamentals of a science training. This commonality has become hidden in general discourse because scientific objectivity nowadays allies itself with secularity.

To claim that a piece of work is 'scientific' implies an ideal of good science. This is of particular interest in an investigation of holistic and qualitative science because some aspects of knowledge of nature, viewed as superstitious or magical (for example the four fundamental qualities, or elements) were eventually outlawed from conventional science. To reopen questions of qualities, the role of the human senses and emotions, and notions of nature as

active (and therefore research with nature as participative) may still remain controversial. Similar ideas may at various times have been dismissed as anti-Christian, Pagan or New Age mysticism. But such criticisms tend to forget that the origins of the modern scientific method were a curious mixture of New World idealism, Christian monotheism, Renaissance mysticism and capitalism. The interpretation of nature, it seems, will always be an issue.

Hugh Lacey convincingly argues that ‘control over nature’ was the key value underpinning the entire project of modern science. As we shall see later, this approach is not the only option for science, but aligned with a materialist mathematical/ quantitative worldview, it gave rise to the scientific method which has been so successful and pervasive. As Lacey argues, the world has so far been fairly amenable to this dual control-materialist strategy, but limits in terms of environmental damage and human well-being have been recognised (Lacey 1999). As he explains, there is no logical reason why scientific approaches have to continue along materialist and control-orientated lines. Other strategies could value and promote ‘grass-roots empowerment’, or take account of the feminist approach in the interests of impartiality. Other approaches could place equivalent value on non-instrumental aspects of nature as inherently valuable, variable, active, mysterious and symbolic, just as the etymology of *agriculture*, from *colere*, implies inhabit, cultivate and worship. There is, nevertheless, tension between the certainty of closed, defined knowledge and the will to be part of something which is more amorphous and thus potentially overwhelming. ‘Success’ is a matter of finding a third place between Will to Be and Will to Create (as discussed further in Chapter 7).

As mentioned in Chapter 3, a new approach towards the workings of nature is currently being requested in academic circles – one which is less anthropomorphic, less instrumental and more naturally holistic. Such a natural philosophy could focus on the bonds between human and non-human. In the following chapters on Lucretius and Virgil, I draw attention to the bonds of husbandry – those which depend on sympathetic connections between humans and non-humans. The investigation will have to readdress notions of holism, anthropomorphism, animism, subjective knowledge and symbolism. These are not part of the agenda of modern good husbandry, nor traditional good science. Yet all can be recognised in the actual writing of science. For example, I have encountered the writing of Philip Henry Gosse in *Evenings at the Microscope*

(Gosse 1874). He was keen that people should observe nature for themselves, and also wanted to promote feelings of wonder and trust in nature, which he must have realised were becoming obsolete as science became more 'professional'. It could be suggested that the growing emphasis on individualism in the twentieth-century led to a crisis of confidence in nature as a whole, a striving for certainty, and a decline in negative capability. It is clear looking at older examples of science writing, including the writings of Darwin, that the symbols, descriptions, and ways of conceiving truth are not neutrally objective but are naturally influenced by both historical era and personal persuasions.

The modern scientific method and agriculture developed in tandem. Both are underpinned by a moral code of good husbandry. This code favours productivity, financial profit, improvement of nature and individualist human ingenuity. These values can be opened to question by looking closely at Lucretius' scientific materialism. Here we see a pre-Enlightenment version of husbandry, whereby nature is represented as active, where rational engagement between humans and nature is both sensory and intellectual, where anthropomorphic assumptions are set aside. Natural philosophy involves looking at nature and reasoning about it. Such knowledge is expressed creatively. The goal is contentment, enlightenment by contemplation.

Table 4.1 The Bacon / Modern Universe Summarised

<b>Approach</b>	<b>Bacon/ Modern Universe</b>
Overall outlook	Bacon 'the puritan'
Basis of unity	monotheism and dualism – natural realm giving insight into the divine; one, hidden reality causes the known realm; positivism – natural laws
Basis of rationality	quantitative depiction, 'number, weight and measure'; natural cause and effect laws; analytical and empirical
Religious or secular influence	developed from patriarchal monotheism and puritan ethics
Aim and justification	to understand the workings of nature and thus influence events
Metaphysical position	natural laws and models underpinning reality
Autonomy given to natural objects	tends towards determinism of cause/effect
Human sensory experience	viewed as deceptive – objective measurement preferred
Human-nature relationship	value placed on control of natural events – anthropocentric
Human-animal relationship	reason separates humans and animals, relationship is hierarchical, control-orientated

## MAKING A THIRD PLACE: THE SCIENCE AND THE POETRY OF HUSBANDRY

Attitude towards future	progressive attitude, focus on improvement, innovation, profit
Attitude towards poetry	suspicion of language and imagination generally, (though Bacon quotes classical poets), functionality and single truth is what matters
Advantages of approach	advances of quantitative sciences, increased productivity, less superstition
Disadvantages of approach	mechanistic emphasis on control and manipulation, humans given 'divine' mandate to intervene for profit, models and laws are intellectually detached from everyday experience within nature; nature is ultimately denied 'free-will' and autonomy

## **Chapter 5: The Husbanding of Nature: *de rerum natura***

- 5.1 Epicureanism and Scientific Materialism
- 5.2 Poetic Bonds of *de rerum natura*
- 5.3 First Beginnings of Things
- 5.4 Lucretius' Humans and Animals

This chapter is an exploration of a materialistic understanding of nature which is both poetic and scientific. The Epicurean model as expounded by Lucretius does not function on the basis of control, nor does it follow monotheistic, anthropocentric logic. The mind and the spirit, soul and body, and humans and the rest of nature, are united in the Epicurean universe. Here, perhaps paradoxically, it is our own senses which unite us with that which is not us. Lucretius, through Epicureanism and through poetry, provides an example of a hospitable philosophy, whereby animals can be regarded as models and mirrors of ourselves. He also, however, epitomises the true 'scientist', as one who contemplates the world from a position of interested detachment.

The poems of this chapter are loosely derived from Lucretius' reasoning in *de rerum natura*. Man and Atoms is an interpretation of the Lucretian vision, where 'the man' personifies the analytical mode of thought. Travels of Saint Thomas is an exploration driven by the idea of touch as evidence. The places of the poems are real: Cueva de la Pileta, the cave of the trough, is near Gaucin in Andalusia, Spain. Here, on view, are cave paintings of animals and symbols from two historical periods: upper Palaeolithic period (Cro-Magnon man, 25,000 BCE) and Levantine Mesolithic. The Tomb of the Eagles, Isbister Chamber Tomb, is in South Ronaldsay, Orkney, and it dates from around 3,000 BC. The tomb contained human and animal bones, and the remains of white tailed-sea eagles, which may have been a symbolic totem for the people who used the tomb. The lines quoted in Tacit are from Democritus (c. 460 BCE) (Bortoft 1996, p.196). Connoisseur and Second Wind can be taken to represent the thought that there are various ways of looking at the world and reasoning about it – these two poems contrast the analytical with the fluid, or the mind with the spirit.

Poems:

MAN AND ATOMS

TRAVELS OF SAINT THOMAS

CONNOISSEUR

SECOND WIND

*Note: pages with poems have been removed for reasons of copyright.*

## 5.1 Epicureanism and Scientific Materialism

*De rerum natura* is a profoundly important piece of classical literature, a 'monument to reason'. The poem was written as a contribution to natural science (*physica*) and also intended as a unique artistic achievement (Serres 2000, Skinner 2003). It is the combination of poetry and science together that informs the whole. *De rerum natura* shows, in emulation of Epicurus, human abilities at their full stretch – *mens animus* – the use of both mind and spirit (Skinner 2003, p.24). Cicero noted, just after Lucretius' death, that he had demonstrated both technical experience and knowledge directly received from nature, both *ars* and *ingentium* (Kenney 1971). Although Lucretius wrote *de rerum natura* during the first-century BCE, the tenets of his scientific materialism are at times strangely familiar, or strikingly apt. The work still holds implications for the twenty-first-century.

Lucretius' philosophical ideas were derived from Epicurus (c. 341-271 BCE). His idea of writing a didactic poem is thought to have been inspired by the Greek philosopher, Empedocles (c. 492-432 BCE), who wrote an epic poem on nature (Sedley 2003).

Epicureanism was an ancient form of atomism based on an insistence that there were rational, natural explanations for all events in the universe. Cycles and patterns of creation and decay were viewed as natural, as were all unusual phenomena and day-to-day happenings. Matter was said to consist simply of atoms and void. The movement and rearrangement of atoms was the fundamental explanation for the cyclical formation, dissemination and reformation of all things. Epicurean philosophers believed that the study of nature was paramount. The human senses, coupled with reason, were believed to be of prime importance as sources of evidence because they were the basis of interaction with the world. Epicureanism was not an abstract theory of physics, instead it was grounded, holistic and practical. Epicurus lived during politically violent times in Athens. He was self-taught and his doctrines were a unique combination of early Greek atomism and practicality. The latter is aptly symbolised in a story that Epicurus kept his companions alive during a siege in 294 BCE, by counting and distributing beans amongst them. His followers eagerly seized the intellectual and practical liberation which his



teachings offered. Spiritual oppression and the fear of death were exposed and dismissed as irrational (Kenney 1971, p.1). Epicurus' theories on nature, physics and ethics had persisted until the time of Lucretius, two hundred years later. There is an underlying feel that Lucretius, like Epicurus, was driven by despair over current events. Both writers were determined to use reason and common sense to undermine the oppressive political and religious forces of their times.

*De rerum natura* has both spiritual and practical dimensions because this philosophy insists on harnessing the spiritual to the body, and to the sensed, physical life. Lucretius frequently uses religious tones and metaphors, most notably that of truth as light. The followers of Epicureanism are described as blessed, they are almost like the proverbial gods themselves – detached from suffering and oppression. Epicurus is the source of this enlightenment, almost a saviour:

Oh, in such persistent absence, how you pierced  
that vivid first-light, I am inclined to follow  
your kind paths, will plant my feet, carry your mark;  
longing to sing, close and certain – I will mimic  
you, though I, a swallow; you, a swan.

3:1-7

The words in Latin echo with the exclamation O: *extollere, potuisti, commode, sequor, o, pono, propte amorem, quod, aveo*. The poet is both serious and joyful in his role as *hirundo*. Often, in *de rerum natura*, the sound is exploited to reinforce the message. Human senses, in this case, hearing, provide valid evidence, they unite us with the world.

A more subtle inspiration for the writing of *de rerum natura* as a poem was Empedocles (c. 492-432 BCE). The philosophical world view which he championed was based on four compositional elements of earth, air, fire and water (later associated with the qualities of moist, dry, hot and cold). For Empedocles, the cohesive force holding the elements together was Love. This bears a comparison with Hesiod's worldview, and the two complementary forces of love and strife. As the classical scholar Don Fowler pointed out, a system

based on elements did not suit Epicureanism, because the force, by which the elements are held together, could easily become a divinity (Fowler 2002, 186). But even contentious beliefs provided Lucretius with poetic fodder. The four elements are drawn into the description of Empedocles birthplace (1:716-41) (Sedley 2003, p.11). Lucretius was also perfectly happy to exploit the symbolic power of Venus.

This is a common poetic device of Lucretius – to invoke even as he denounces; to set up the contrast of that which can be and that which cannot. He presents, hand-in-hand, the great and the small, the swan and the swallow, so he can mention the deeds of Hercules, even if they are miniscule compared with the wisdom of Epicurus. He can conjure fabulous beasts into his poem – the Cretan bull, the snake headed Hydra, the threefold Geryon – in order to slay them by reason (5:1-45). There are no centaurs, except in their mention, which simultaneously dismisses them (5:878). This dialectical device is one way in which the poetry achieves connectedness, just as presence suggests absence, and atoms suggest void. This, to reiterate points made in Chapters 1-3, is the strength of the poetic vision in achieving connections between even opposites, if necessary.

Interestingly, the underlying principles of Lucretius' own physics, like the physics of Empedocles, are fourfold. In Lucretius' case, the essentials are: atoms, void, movement and free-will. Some commentators emphasise Lucretius' atoms as a prophetic masterstroke (Midgley 2002, Skinner 2003). On the other hand, in any historical period, the striving, analytical mind is bound to suggest a model of the universe based on ultimate, invisible building blocks. The same human urge to seek the minimal, primal components of nature, can be recognised also in the endeavours of the modern sciences. Equally, the creative mind is bound to intuit some aspects of wholeness or means of connection. Atoms had already been postulated in the fifth century BCE by Leucippus and Democritus. (Skinner 2003). Lucretius' unique contribution was to style his writing as a mirror of the subject and to look to nature 'herself' as his guide. His poetry is whole, as nature is whole. In this way Lucretius' genius comes from the same natural source as Shakespeare's genius.

Atoms were the entities from which Lucretius imagined the universe. They were the constituents of all things, their coming together was the basis of creation,

they were the constituents to which all things dissolved into after death. In this way, only atoms were everlasting, they conferred unity on all living things, and they were themselves given agency in action. In Epicureanism, holism is also achieved between the body and the soul (since all that exists is embodied) and between the senses and reason (since both are valid as evidence). Therefore the basis of the human-nature and human-animal connection is atomic materialism, sensory engagement, and an active, creative nature. These constitute the bonds of what can be termed Lucretian husbandry.

In the following sections, the nature of Lucretius' universe will be outlined, with the intention of showing that any single model of the universe shapes ideals of husbandry. Lucretian husbandry contrasts with the sort of husbandry which a Baconian model proscribes. Table 5.1 summarises the key aspects of each self-contained universe-model.

Lucretius' science was inherently logical and reasonable, yet very different in character and values to modern Baconian science, although his science also had its own internal logic. As the table shows, these models share certain characteristics: both are materialistic in that natural explanations are sought for events, and both are atomistic, in that compositional units are the basis of explanations. However, the Baconian approach is clearly interventionist in style whereas Lucretius emphasises contemplation and peace of mind. Differences are to be expected and, to some extent explained, because of different historical eras, social and political events, personal styles of expression and the overt remits of the works. However, there are universal strands which transcend specific eras. These models also illustrate that differing worldviews need not be split into wrong or right, either/or. Both were 'of their time', both can still be recognised as rational, self-contained, and logical. Both are still open to question and both are still of value.

**Table 5.1 A Comparison of the Lucretian / Epicurean and the Bacon/ Modern Universes**

Approach	Lucretian/ Epicurean Universe	Bacon/ Modern Universe
Overall outlook	Lucretius 'the scientist'	Bacon 'the puritan'
Basis of unity	atomism – everything ultimately composed of atoms in motion	monotheism and dualism – natural realm giving insight into the divine; or, one hidden reality causes the known realm. positivism – natural laws
Basis of rationality	both reason and senses as evidence, although 'atomic reality' is hidden from direct sensory evidence; analytical and empirical	quantitative depiction, 'number, weight and measure'; natural cause and effect laws; analytical and empirical
Religious or secular influence	materialist and secular – religion seen as a negative influence	developed from patriarchal monotheism and puritan ethics
Aim and justification	to achieve peace of mind, transcendence	to understand the workings of nature and thus influence events
Metaphysical position	nature explained in natural terms, materialistic	natural laws underpinning reality
Autonomy given to natural objects	yes – free-will of even atoms is emphasised	tends towards determinism of cause/effect
Human sensory	valid as evidence,	viewed as deceptive; objective

experience	although 'atomic reality' is invisible	measurement, models and laws preferred
Human-nature relationship	value placed on atunement with natural events	value placed on control of natural events – anthropocentric
Human-animal relationship	animals as mirrors of humans, sensory evidence unites experience, domestication of mutual benefit	reason separates humans and animals, relationship is hierarchical, control-orientated
Attitude towards future	fear of future is unnecessary, events cannot be influenced, cyclical patterns emphasised, return to atoms	progressive attitude, focus on improvement, innovation, profit
Attitude towards poetry	poetry sweetens the message, persuades and appeals to the senses e.g. through sound; words/ letters can symbolise atoms	suspicion of language and imagination generally, (though Bacon quotes classical poets); functionality and single truth is what matters
Advantages of approach	inclusive, non-superstitious, allows free-will, not controlling, no false 'scientism', disinterested interest	advances of quantitative sciences, increased productivity, less superstition
Disadvantages of approach	tends towards atomistic, interpretations of complex situations, individualistic detachment; over-	mechanistic emphasis on control and manipulation, humans given 'divine' mandate to intervene for profit; models

	emphasis on 'touch' as evidence, nature ultimately denied certain attributes	and laws are intellectually detached from everyday experience within nature; nature is ultimately denied 'free-will' and autonomy
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## 5.2 Poetic Bonds of *de rerum natura*

*De rerum natura* is an early example of scientific thought. In some aspects, Lucretius' science is similar to contemporary science. He constantly seeks secular, objective explanations – objective, that is, in the sense that agreement can be reached and that detached contemplation is the goal. Lucretius' theory could be described as reductionist, in that he works at the smallest atomic level. However, his work is also holistic because he maintains natural bonds in his reasoning. This is encapsulated in his constant motif, the underlying bond which explains all others, that is, the swerve between atoms. The swerve gives rise to all that exists. His universe is a self-contained and vibrant whole. Importantly, Lucretius knows these things because of the behaviour of language.

Crucially the Epicurean ideal of contemplative peacefulness is also facilitated by sensory engagement with the world. The workings of the senses are explained by Lucretius at the atomic level, since atoms, for him, are the only and the ultimate reality for all physical existence. This early science therefore preserves both detachment from the world and sensory engagement with the world. Baconian modern science, as we have seen, gradually moved away from sensory engagement, towards mathematical representation. This, in combination with an interventionist remit, both implied and valued human-defined goals of profit and innovation. Further, with evolving experimental methods, came the gradual severance from everyday context, sensory experience, and language. When we look at Lucretius' science, we recognise, in his thought experiments, the power of common, intuitive reason, and daily experience.

Because of the characteristics just outlined, the Lucretian universe is a place of husbandry between science and art, humans and nature, body and soul. It is, strangely, a place of both engagement and detachment. Also remarkable is the predictive power of Lucretius' imagination – the patterning which he could discern from first beginnings was able to encompass every thing. Now we will consider the place which he created in some detail.

Lucretius makes overt the connections between natural cyclical processes of growth and decay, since these are manifested in all things. In keeping with the husbandry remit of this thesis, an appropriate passage from *de rerum natura* is one where Lucretius draws on the oldest of husbandry myths, the divine marriage between sky and earth:

In that very place, where recent showers  
plunged headlong to marry earth,  
the nurturing green rises, tree-twigs brighten,  
they bear increasing fruit. So, the races  
of humans and beasts are furthered;  
so, we see cities flowering, starry-eyed with children;  
so foliage and birds greedily erupt in the forest.  
Cattle, made fat on joyful pasture, collapse,  
dropping fairest milk and everywhere the young  
are possessed with it and stagger, madly happy.  
So the essence of the visible does not perish altogether  
when nature restores things, from one place to another,  
nor does she give Birth without Death,  
her hand-in-hand accomplice.

1:250-264

As mentioned before, this myth recurs in many historical periods and cultures. It is an archetypal expression of the union of male and female, it is clearly a universal metaphor for the interaction of weather and land to produce fruit. The myth can also be taken to symbolise integrated wisdom and sympathetic knowledge. Lucretius draws on it very subtly, continually, in *de rerum natura*,

when he describes atoms falling like rain, and when he stresses the creativity, and the fertility, of nature.

David West analyses the fluidity of these images as he despairs of attempts to translate the passage into English. 'As flower and fruit are to the tree, so are children to the city' (West 1994, p.6). The children, the nestlings, the foliage and the calves are new. All depend on the vital moisture hurled from the sky. This dependence is poetically expressed, it is also true. Any anthropomorphic hierarchy is set aside for the purposes of connection. The common link is the element water and the processes of growth and renewal. The sky, personified as male, is of interest to Lucretius as long as the metaphor is not taken too far – there are no godly, judgemental forces present in dark clouds, or in thunder and lightning. Such superstitions are to be trampled underfoot, brought down to earth, (1:62-79 and 5:380-422) (West 1994, p.58).

The scientific materialism of Lucretius is both scientific and poetic in its truths. All of nature is connected in patterns of birth and death, growth and decay. Nature is active, various, animated, spirited. We, as humans, are involved as part of these processes. In Lucretius' poetry he is looking at nature and reasoning about it. This *physica* involves both analysis and synthesis. Lucretius also knew that words could sweeten his message – he uses the metaphor of honey: it is bittersweet, ambiguous – like husbandry – a composite of opposites. The words contain the message – not just rationally but sensually: the sound, form, senses and meaning are united. *De rerum natura* provides an example of a scientific materialism which is in harmony with the natural world, and is realistic about the place of humans in the universe.

Why did Lucretius write in poetry? It is known that Epicurus had been a writer but he did not favour poetry. However, Epicureans were called to 'pay attention to the first image associated with each word' and to learn from the world which is before our eyes. This ties in with the descriptive role taken by the poet (Fowler and Fowler 1997, xxvii). Epicurus argued that words should be clearly and simply used as befitted the simple, liberated way of life, whereas Lucretius is constantly aware of other aspects of words – they are the honey that sweetens the message, though these matters are dark (*obscura*), (1:922) (Lucretius 1925, p.76). They provide examples or metaphors of natural processes (the coming together of atoms, the natural evolution of speech) and



they are ambiguous, and open to both use and misuse. They can cajole, they are weapons with which to win battles, they are deceptive and persuasive, they can be the basis of concord, they can be used to protect, they can be used to reason logically, and they can be used to misrepresent, as a man does when he describes a woman whom he loves (4:1141-1184). While the reader grapples with the stringent medicine of Epicureanism, Lucretius uses poetry to persuade, in the way that honey on the rim of a medicine glass will get children to swallow the contents (1:935-950 and 4:11-20). The proem of book 3, praises Epicurus , ‘who from so great darkness could uplift so clear a light’ and we (his followers and Lucretius, and the reader) are said to sip his golden words, like bees sipping flowers (3.11,12). Subject of much comment is the proem of book 1, where the invocatory style directed to Venus seems out of keeping with Lucretius message that gods and goddesses do not intervene. However, Venus serves a poetic purpose – she is the muse who can give Lucretius licence to represent nature as loving, nurturing, and the mother of all. She is also a nod towards the beliefs of Empedocles:

Venus, Creatress of all and of Aeneas,  
 whose response unfurls our days,  
 who soothes with milk,  
 it is you alone in heaven who stalls the constellations  
 to concede fruitfulness to sea and earth;  
 through your shelter, all living things  
 rise and repeatedly gaze on the sun.  
 For you, goddess, winds flee,  
 clouds rise at your coming,  
 the skilful earth bursts into sweet blossom,  
 the sea laughs calm crossings,  
 the heavens dimple their lightness.

1: 1-5

This view of autonomously active nature is quite the opposite of much of our twenty-first-century rhetoric about humans and nature. To enter into Lucretius’ mindset might help us to switch our human-centred thinking – it is surely nature who husbands things!

In Lucretius' reasoning about nature, animals and humans are closely related. Therefore the observation of animals is commonly used as evidence for human experience. Animals display emotions, for instance, depending on their soul atoms, *sic hominum genus est*, (3:307) (Rouse 1925, p.210) and 'so it is also for the race of men' (Melville 1997, 78). Mind and spirit are born in living creatures and are mortal (3: 417,416). More poetically, 'the spirit has both a birthday and a funeral' (3: 711,2) (Melville 1997, p.89). And, in another example of husbandry as a metaphor for the whole, 'the marriage bonds of body and spirit weld us together in one single whole' (3:845,846) (Melville 1997, p.93). Since, in *de rerum natura*, religious superstition has been dispensed with, there is no basis for a human-only soul and therefore no human-animal hierarchy. The movement of *anima*, soul-atoms, is thoroughly physical, it is the basis of sensation and perception.

Since all knowledge, sensation, and creation ultimately depend on contact, on touch, Lucretius' atomism was not as divisive as is sometimes assumed. It was an integrating vision, embracing all that exists. This condenses the very essentials of Lucretius' philosophy – there are only atoms and void: *tangere enim et tangi, nisi corpus, nulla potest res* (1:304) (Rouse 1925, p.26). 'Nothing can be touched except body' (Melville 1997, p.12). Lucretius is a St Thomas figure – for him belief comes from touch, that is, from real experience, as mediated by the senses (5:100). The senses are considered in detail in *de rerum natura*, book 4. They are the basis of connection between humans and the rest of nature. Both sensory and intellectual engagement are cornerstones of Epicureanism. There is some ambiguity in the atomic message, however, because the atoms themselves are not actually visible. Lucretius renders them visible in the imagination by reasoning from analogy, for example, they are like moving motes of dust caught in the sunlight. (2:114-141). In Lucretius' universe, all things are transient and fluid, and the fundamentals are simply atoms and void. The commentator Don Fowler insightfully refers to this as a 'theology of atoms', whereby the atoms take on the tasks and attributes of deities – they create and separate (Fowler 2002, p.157). Lucretius' atoms, like the gods, were invisible yet omnipresent, indestructible, immortal. We shall see later the way in which Virgil sidesteps this impasse. Also, it has been noted that an over-emphasis on touch (only one of the senses) leads to a solidification of all of nature. Lucretius is caught, and at times tormented, in his search for tangible evidence and in his need to find, or to convert, others to agreement.

*De rerum natura* is not a personal poem, but, as I have tried to express in my small versions, this man knew loneliness.

### 5.3 First Beginnings of Things

Spontaneous generation does not occur; nothing comes from nothing: *ex nihilo nihil fit*. Equally, symmetrically, Lucretius reassures that nothing ever reverts to nothing (1:237). These sayings were common to many ancient Greek physicists, Epicurus (341-270 BCE) and before him; Aristotle (384-322BC), Democritus (460-370 BCE) and Anaxagoras (500-428 BCE) (Bailey 1947, p.634Wilkinson 1970, p.624). These philosophers each held that there was a permanent stock of matter out of which things were formed by combination, and later dissolved. They differed in their views over the fundamental nature of this matter and the methods of their assimilation and dissolution. Lucretius presents the saying: *nil posse creari de nilo* (1:155) (Rouse 1925, p.14), as always keen to stress that there is no divine creation, and no supernatural explanations. The primal elements from which all things are made are the atoms – nature's raw materials:

How nature, on the crest of her wave-work  
from first-beginnings, entrusts  
and by the same token, collapses, all that ever was –  
nature-killer, the day after tomorrow.

1:54-57

The connectedness of things is crucial in Lucretius' universe. The basis for synthesis, in his worldview, is the swerve of one atom towards another. He stresses that this is not a divinely caused or predetermined movement, the *clinamen*, or swerve, happens by chance. Therefore, on all scales, the *clinamen* allows for free-will (*libera voluntas*). It also allows happenings and events to be spontaneous, unpredictable (2:261-2:271). Everything in the universe and on all scales of existence, can be explained in these terms (1:55-60). The *clinamen* is described (2:220) as *tantum quod momen mutatum*, only so much as a change in direction or an oscillation. The commentator Bailey

suggests a link with the ancient Greek word for 'balance' (Bailey 1947, p.843). Usually *clinamen* is translated as 'swerve' or 'declination':

And another thing on which I want to shed light,  
to answer, from the unknown void,  
is that, solitary bodies, raining under their own weight,  
wept of specifics, are able for some reason, untamed, to swerve  
from the usual hapless echo.

2:216-210

The *clinamen*, albeit a slight movement was a highly controversial idea, it of course could not be directly observed. And it was, from the Epicurean point of view, crucial as a way of arguing against rigid determinism. He gives the example of the racehorse, which, when the barriers open, although he is tense and keen, does not move until the whole mass of matter is stirred in a combined effort of heart and mind. So (with Lucretius' usual nature-to-nature reasoning) it is the case for atoms: the swerve is not due to weight or forceful external blows, it is the self-willed power of creation, which is born in all living things.

Lucretius stresses a contrast between *foedera fati* (2:254), the law of fate which is binding, and *foedera naturae*, the law of nature, which includes free-will. *Libera* and *voluntas* are crucial to this freedom, otherwise men would not be free to escape the predetermined rules of cause and effect. This is one clear difference between Epicurus and other Greek atomists such as Democritus, who held an un-swaying determinism as the rule of the universe. Epicurus wrote that it would be better to follow the myths about the gods than to become a slave to the destiny of the natural philosophers, since at least 'the former suggests a hope of placating the gods!' (Rouse 1925, p.842). The freedom offered by Epicureanism was the freedom from determinism as well as from religious and political oppression. The association between happenings on an atomic scale and those in men's lives might seem oddly dizzying to a modern sensibility more used to connections between local things. Yet, as mentioned in Section 3.4, an aspect of holism is that the parts contain the whole and the whole is fulfilled in the parts, rather like a hologram. Therefore, one might argue

that it is perfectly apt to see the universe as a hologram composed of atoms. Certainly it is a function of the poetic mind to see the universe in an atom.

Lucretius' scientific materialist universe is not mechanical. It is fluid, creative, various, vibrant, free. All things are continually in flux, (5:280). His poetry is easily compared with that of Gerard Manley Hopkins: nature is various, brindled, dappled, and to be praised. The things in nature are both ensouled and embodied. Lucretius' method is creative, passionate, scientific and rational. His example demonstrates ways of overcoming Cartesian mind-body dualism, human-environment dissociation, and desensitised science. For a science of husbandry, in connection with the old many meanings of *Agricultura*, there is no reason why nature cannot be visualised as connected, particulate, vibrant.

To apply Epicurean materialist logic to the human body – the mind and the spirit are also body (3: 176), they are 'conjoined and in one single nature fixed' (3: 136, 137). There is no ethereal soul or pure disembodied spirit – the *animus* or *mens* is the mind, fixed and situated in the human breast (3: 140); the *anima* are soul atoms present throughout the body – their movement is responsible for sensation. These components – *anima* and *animus* constitute the soul, which only exists when the body is alive (3: 161-176). Because the mind-soul acts swiftly, the atoms, Lucretius reasoned, must be very small, smooth and round (3:205) and flow easily, like poppy seeds (3:182-201) (Skinner 2003, p.89).

When Lucretius explains that the *anima* is mortal and physical, he is able to reconcile the whole organism in all facets of mind, body and spirit:

It costs then, a host of impalpable particles  
stirring before we are shaken to attention;  
soul-seeds cascading waken our joints –  
bodies charging, chiming, sparking apart –  
intricate, reciprocal, integrated.

3.391-395

But *de rerum natura* does not confer uniformity, rather Lucretius also insisted in preserving uniqueness: each thing having its own particular nature and, as we saw earlier, the freedom under nature's laws to act accordingly. This

extraordinary vision is poetic in the way that William Blake saw the world in a grain of sand; it is scientific in the way that it strives to delineate natural laws which confer attributes on all things. Lucretius, and his ability to see directly from nature, is a reminder of the epithet *ingenium*, which referred to natural abilities and inclinations, talent and genius. 'Inclination' and *clinamen* and *ingenium* all relate to natures' law of creative freedom, which is manifest in the work of the poet himself, and in all whole entities, in, despite of, and because of their individual uniqueness.

Lucretius exerts a fierce logic in rendering the invisible, visible. His strategies are to invoke sensory evidence in the reader and to play with scale reasoning by analogy. What is true in the scope of everyday must also be true for atoms. His passion is to bring enlightenment through detached contemplation of natural truths. His model of the universe is poetically informed – that is, he gains insight and exploits the way that words behave in poetry itself:

In the same way in fact the vast hordes of atoms  
cram and burst to make this and that,  
to squeeze together to take their positions,  
they greet and consort and part to create  
*the sky the sea the earth the sun*  
all things flow from these constituents.  
Even the fruitful trees, and all living creatures  
are truly only moving atoms.  
Why not? Look at these verses turned  
from only letters dispensed in sound  
how they jostle and shuggle to spill  
their meaning, even when drawn apart  
they resonate, they give and receive,  
though singly set in rows.  
How much more the primordial elements  
are variously able to make all that is.

1: 823-829

Written language can give insight into how natural things are and behave. The way in which atoms, as active entities, compose and dissociate and recombine; focusing and finding kinship, is to some extent comparable with the assembly of letters into words. *Elementa*, (line 827) the word itself, is all of these things: first beginnings, first principles, germs, atoms, particles, letters, and the four elements.

However, Lucretius explains that atoms are more various and more creative than letters. He bemoans the poverty of Latin compared to the original Greek of Epicureanism (1:136-145). Typically, he avoids technical terms from Greek philosophy. Even physics, *physica*, the subject of the poem, Lucretius called *naturae species ratioque* – looking at nature and reasoning about it (Sedley 2003, p.36). He preferred to express and to illustrate single tenets or principles in a variety of ways. As part of this policy, he used sets of metaphors which would collectively express the attributes of the things in question. Therefore, atoms are referred to as *elementa*, *primordia*, *corpora prima*, *semina*. This is creative, sophisticated use of language, it involves the understanding that all words are in essence metaphorical, all have limited success in representing things. Lucretius' other great literary skill involves the invocation of the senses as evidence.

*De rerum natura* depicts atomism as literally a 'science of qualities'. Perception and sensation are based on the movement of atoms, in fact of the soul atoms, the *anima*. Qualities such as colour, taste, smell were also explained by Lucretius as being due to composites of atoms – 'entanglement' because of hoops or branches (Skinner 2003, p.55). Considering taste, for example, bitterness was said to be due to rough atoms and sweetness due to smooth. In honey both types are mixed, it is bittersweet (4:670) (Melville 1997, p.119).

Poetry works because it connects with our senses – it sounds as the verses are read aloud, but, at a deeper level, the meaning is negotiated from sound during the writing process itself. *De rerum natura* invokes the sensory evidence on which Lucretius' doctrine depends – examples of *communis sensus* are constantly given. This ties in precisely with Epicureanism: perception and sensation are physical, they are based on pure atomic experience, atom upon atom. Sight is said to be due to thin images, thrown from the surfaces of things *simulacra*, and hitting our eyes (4:42-74). Sound and hearing are also physically

explained since sound and voice strike with their atoms upon the senses (*corpore sensum*), (4:524-529). Lucretius' explanations are comically literal to our ears. A long speech weakens a body, he argues, therefore the speaker must be losing part of his body (5:535-541). Shouting hurts the throat because of the abrasion of many atoms escaping all at once, hitting the sides of the windpipe. These ideas give Lucretius the potential to play with words, as he loves to do, and this needs to be creatively translated:

A jagged voice is evoked from jagged atoms  
whilst smooth ones make smoothness

4:551-552

Characteristically, he does not leave it there, but follows with examples of extremes. To use words from Rouse's translation: the 'bellowing of a barbarous horn' (*et reboat raucum retro cita barbara bombum*) is contrasted with melodious, mournful swans (*cum liquidam tollunt lugubri voce querellam*) (Rouse 1925). This is the crux of *de rerum natura* and poetry – the sound echoes the sense, as it makes the sense. There are, in the Latin, countless other examples of Lucretian onomatopoeia. The most famous example relates to animal language (5: 1063-1072), but the strategy is subtly the basis of the whole poem.

To return to the bodily senses, taste is explained as the touch of atoms. If a substance tastes sweet, it is because it consists of small smooth atoms. If bitter, rough and hooked atoms are penetrating the throat.

And we must agree that milk and honey  
roll on the tongue to taste delicious  
in contrast harsh centaury and wormwood  
hurl themselves to set the teeth on edge

2:398-401

Elsewhere, honey is described as a bittersweet composite, containing several types of atom (4: 670; 2:398-407; 3: 191-195). Lucretius returns to honey as both subject and metaphor knowingly – he is writing composites of bitter and



sweet truths, actual facts and literal demonstrations, cycles of birth and death, reduction and synthesis. Although the Epicurean universe and the factual details of Lucretius' explanations have been superseded in places, the poetry remains. His poetry is entirely appropriate – it is sensuous, it is bodily accurate, bodily engaging and bodily truthful, as well as being philosophical. It is both bitter and sweet, it performs that alchemical transubstantiation of bread to body, water to blood. It symbolises a universe held together by atomic explanations, as evidenced by the physicality of experience. This is the liberation of Lucretius' message, to save the reader from supernatural superstition and a fear of death. But, in doing so, he describes the very things we should not fear: plagues, sacrificial death, violent battles, the monsters of nightmares. 'Not by prolonging life, one single second do we deduct from the long years of death' (3.1086,87) (Melville 1997, p.100). The recognition of this truth is part of his healing medicine. So the poetry is composite, it cannot be separated from the subject even as scent cannot be separated from frankincense, nor the mind from the body.

Lucretius' vision has been presented as an intriguing precursor of modern science, yet it is a different sort of science. In retrospect we can recognise the fundamental problems of analytical consciousness, whereby things are conceived of as separate, and, at that, as either atoms or void. These problems may be summarised as follows. Analytical 'either/ or' propositions do not accommodate misfits, ambiguity, nor poetic wisdom. The centaur (referred to in *Connoisseur*) becomes a signifier of poetic truth which is not necessarily logical. Continuity is not easily accommodated by atomistic visions, even the *clinamen* can start to seem a mechanical joining of things which are already joined. This is why the translation 'first beginnings' for *primordia* is so interesting, because it is a subtle reminder of time (see book 1:459-463) (Rouse 1925, p.38). If the reference and the perspective of linear time is 'taken out of the equation', if time is acknowledged an artefact of our universe and experience, suddenly questions regarding determinism and free-will look different. I have explored these ideas in *Second Wind* (time and motion are, after all, *legato*) and in *Man and Atoms*. Our tradition of viewing time as a linear sequence, which progresses from left-to-right, is a convention. Other conventions in other societies include the notion that the future has already happened and that time moves from right-to-left. (Incidentally, this perspective has something to

contribute, not just to the issue of free-will or determinism, but to our usual concept of 'progress').

The atom/ void dichotomy focuses on solidity and touch as evidence – this lent itself particularly well to numerical measurement. Evidence from other senses is more difficult to depict and measurements may be of correlates rather than of the qualities themselves. (This was the basis of Goethe's criticism of Newton's measurements of colour by angle of refraction) (Bortoft 1996).

The atoms are invisible, therefore there is a 'built in' detachment from experiential reality. *De rerum natura*, is not portraying how things are, but a coherent model of how things might be. The consequence of this approach generally is a detachment from nature herself – she becomes 'impoverished' and 'denatured' (Bortoft 1996).

However, these consequences were not Lucretius' intentions – he wrote poetry to save his work from the excesses of the analytical mentality, to experience synthesis in the writing itself, because of the sensory value of words and because of the creative aptitude of words as models of atoms.

#### 5.4 Lucretius' Humans and Animals

There are many examples in *de rerum natura* where animals provide evidence for human experiences and images to support Lucretius' arguments. We have seen that the racehorse is an image for the *clinamen*, the free-will and spiritedness of things (2:251-262). The movement of atoms is also, says Lucretius, like the movement of sheep on a hill side – spontaneous, as led by the fertile pasture (*laeta*), a movement not discernable from a distance (2:316-322). A comparison is made with great legions of soldiers and horsemen, engaged in violent battle but a motionless brightness if viewed from a distance. Later the same movement is given to the stars, creeping for fiery food, yet their movements invisible to us. So it is, asserts Lucretius, with atoms. As West points out, it is the unexpectedness of these connections that gives the *de rerum natura* such internal coherence, yet audacious power as poetry (West 1994, p.12).

Animals are used to show that qualities depend on the atomistic make-up of the *animus* mind-soul – the heat of lions, the cold wind atoms of the stag, in between the peaceful nature of cattle (3: 296-307). The character with which each is born still remains (3: 309). Lucretius uses animals to stress the mortality of the spirit. If spirit passed from one body to another in a type of immortal re-incarnation, it would make nonsense of the observation of animal characteristics. Lions are strong, foxes, cunning; deer, timid and swift; because their spirits are inborn and mortal. (3: 741-759). In Lucretius' hands, both anthropomorphism, and earthly materialism, become powerful tools in uniting all of the animal kingdom.

On the subject of diet, Lucretius explains that different foods suit different animals because of their differing atomic make up. Therefore bees are attracted over great distances by the smell of honey, vultures by carcasses (4:678-680). Animals must eat in order to replenish the quantities of atoms which they give off as they sweat or pant in exhaustion, to restore strength (4:858-876).

In a passage on the development of spoken language, Lucretius compares the early ability of humans to make sounds with a calf keen to try out his budding horns, and with kittens and lion cubs, ready to fight and bite with claws and teeth. The use of words is also a way to win battles. Early man, when he first settled in family groups in huts, spoke in this way to request protection for children and women with voice and gesture (*vocibus et gestu cum balbe significarent*) (5.1022). Patterns of language are said to have evolved naturally in communities, for practical reasons. Lucretius is disputing an alternative myth that language is god-given (Rouse 1925, p.489).

In Epicureanism, when the gods are dispensed with, barriers between humans and animals fall away: animal language has the same roots as human language:

Great Molossian dogs, slobbery mouthed at first  
jerk to a growl when roused, all bared teeth  
yet sound different when their jealous yapping fills the room  
or when they fondle their own young whelps with licks

pretending to nibble and scoop and gobble them up;  
another tone, the pitiful whimpering when about to be left  
or that yelp when they dodge a gash from the whip.

5: 1063-1072

This short passage attempts in translation to portray something of Lucretius' skill in using the sound to portray meaning, which is part of the natural creativity of language – the sound and sense of words are related, not just in obvious onomatopoeia – the word 'bark' sounds like a bark, (also in latin, *latrare*) but in much more subtle ways. Lucretius' placing of even one word will perform all kinds of connections:

do you not see how nature herself howls  
for nothing less than her body to be free  
of pain so that her mind can delight  
in fruitfulness, rather than anxiety.

2:17-19

As Fowler puts it: 'our nature barks for food drink and shelter like a hungry dog' (Fowler 2002, p.73). Here also is the Epicurean call (literally – in sound) for common sense, a recall to nature, and a reminder that our humanity does not separate us from the natural world.

The psychology of human dreaming is also elaborated using animal examples. Our dreaming is related to our common activities whilst awake:

those pursuits to which we devote ourselves  
things that we would seize with our minds,  
would drink our fill from, if we could,  
return to taunt us, more often than not, in our dreams.

4:962-965

Horses, therefore, sweat in their sleep as if striving to win a race, hunters' dogs sniff the air and jerk their limbs in pursuit of their quarry, and 'even when awake

they often chase the phantoms of stags', a litter of soft puppies will shake themselves as if strangers had arrived. The fiercer the breed, the wilder its dreams, humans having the most troubled sleep of all – fighting and groaning in pain, falling from high cliffs. In dreams *multi mortem obeunt* – many meet their death. Life (and love) is more difficult for men. The animals provide examples of behaviour which is less fraught, closer to nature's ideals.

Venus is behind the mating of humans and animals, (4: 1198), since she symbolises the earth, the 'great crop bearer', and through her power 'creatures of every kind are brought to birth and rising up behold the light of sun' (1:3,4,5) (Melville 1997, p.3). There is a beautiful irony in Lucretius' use of Venus, the one goddess he allows himself to invoke, who symbolises the connectedness of nature. She represents the underlying driving forces, responsible for both synthesis and destruction. She is behind reproduction, fertility and love, she also can cause devastation, plague and death. Venus is the muse who can grant the poets creative perpetuity. For the poet, to create, is also to receive.

Arguably, the two most striking passages on animals in *de rerum natura* are as follows: one on animal sacrifice, and one on the misuse of animals in war. When a calf has been killed in a (pointless) sacrifice to the gods:

the bereaved mother trails through the forest,  
her cloven footfalls heavy, low to the ground,  
she constantly revisits where her child was last seen  
filling the empty glades with plaintive sounds  
and returns to the byre completely exhausted  
still without her little one.

2:355- 360

This poignant passage is presented, in the context of atoms being of generic but also individual shapes, as are other living things, since they are all made by nature. Otherwise how could a mother recognise her young and the young, the mother?

The use of animals in warfare is a matter of horror to Lucretius, such that he can hardly believe that humans would have been so foolish. It certainly would be

guaranteed to backfire, he argues, as lions, boars, bulls and elephants would turn on their masters in the heat of battle. Riders would be unable to calm the terrified horses, and lionesses would leap at the throats of both enemies and allies (5:1296-1350)

As if they could possibly have expected different –  
even those animals that seemed tame at home, reverted  
to the wild, boiled over in the heat of the uproar,  
went berserk right back to their various roots,  
even as now elephants sometimes turn on their keepers  
and gouge them to death, bringing shame and disgrace.

5:1334-1340

There can be no doubt that, in both of these examples, Lucretius is strengthening his moral argument, asserting the untameable attributes of natural forces and the futility of trying to placate the immutable gods. Lucretius' husbandry is one where animals are exemplars. They are animated in exactly the same way that humans are, because both are mortal and spirited. Once this life breath is removed, all return to the common pool of atoms. Thus, explains Lucretius and Epicurus before him, nature is perpetually renewed. This in essence, is the knowledge which comes from looking at nature and reasoning about it. It provides, perhaps, an alternative definition of science, one which does not necessarily depend on manipulation, progress and profit.

*De rerum natura* is not a text that has been confined to scholarship of the ancient Romans and Greeks. It continues to raise questions with which we are familiar – questions on the limits of reductionism, the redress of poetry in presenting complex worlds and relationships, the development of post-modern physics, and complexity theory, the notion of panpsychism in Western culture (Serres 2000, Skrbina 2005, Fowler 2002, Fowler 2000). The *clinamen* continues to be controversial and relevant because it encapsulates the notion of free-will (Englert 2003). The text has also been evaluated from the perspective of the feminine principle, the inclusion of Venus being both highly significant and, in certain opinions, unexpected (Fowler 2002). John Masson in 1907 published an account of the twentieth century developments in chemistry and physics which made the electron a more suitable candidate for Lucretius' 'atom'

(Masson 1907). Quite apart from factual (in)accuracies in Lucretius' knowledge and reasoning, the limitations of Epicureanism may be summarised as follows. As we have seen, atoms became replacements for the gods, even a type of monism in miniature – they are immortal, omnipresent and the basis of all creation. A drawback here is the perpetuation of the idea that at the ultimate level, reality is hidden. This has the effect of detaching every-day, embodied experience from that which is perceived as real. The same problem occurs in Baconian science, where nature's workings are said to be secret. Lucretius overcame this problem in his poetry by constantly drawing on sensory experience as analogy for the proposed invisible particles and their actions, by realising that language sets the pattern.

A second limitation of Lucretian science is the absence of intervention. Ethically good behaviour is rather passively defined. *Felix*, 'happy is he', who accepts with a calm mind what is happening around him. Criticism has been directed particularly at the scene which begins book 2. Here the Epicurean watches the strife and warfare of others, seemingly with delight. This attitude strongly contrasts with Baconian attempts to define good husbandry, good science, and progress. At best, modern science attempts to achieve a better world. At worst, intervention, can make situations worse, or can become oppressive of others. Perhaps Lucretius' calmness is closer to Keats's negative capability – in the sense of resting in uncertainty, rather than being anxious about the future.

A third limitation of Epicureanism atomism is shared with any form of reductionism. The atoms have to join together, somehow, to make a whole. The relationship of addition was difficult for Lucretius to handle, he did it with the swerve of genius, the *clinamen*. This has been subject to much debate – for Lucretius it was a priority in the preservation of free-will against determinism. Curiously, this insistence, if applied at the human level, provides another argument for, rather than against, intervention in adverse situations.

For Lucretius, the universe was an exorable flow of atoms, so transient connections gave rise to things. In Lucretius' view, the way to scientifically engage with reality, is by contemplation, and via the senses. We can see a sharp contrast with Baconian science, where mathematic laws underpin nature and give access to nature's secrets or to 'Divine' knowledge. Bacon's New

World depended on the improvement of nature and this was swiftly aligned with profit. The views of Lucretius and Bacon share aspects of materialism and rational certainty, but ultimately the universes which they depict are as different as are the goals of their husbandry. In the following chapter, we will widen the attention towards Virgil's *Georgics*. Here the logic of Lucretius' worldview is both confirmed and challenged, as Virgil makes room for creative mystery and other visions of wholeness. Virgil was heavily influenced by Lucretius but his universe is not that of *de rerum natura*. It is more ambiguous, less a place of answers. One might say that Virgil's husbandry is the husbandry between different viewpoints, different universes.

However, as we finish this chapter perhaps towards less sure territory, we can hold on to two of Lucretius' conclusions about atoms, nature and truth:

in the final reckoning, each and every thing  
is intimately marked and set within  
its own deep boundaries

5:90

but things unfold correctly, each bound to be  
self-contained within nature.

5:923,4



## Chapter 6: Virgil's Version of Husbandry

- 6.1 Poetic Bonds of Virgil's *Georgics*
- 6.2 The Divinities of Husbandry
- 6.3 Virgil's Humans and Animals

This chapter considers the version of husbandry which is shaped by Virgil's *Georgics*. He is described here as a psalmist – one who both praises and laments. In the *Georgics*, there is no single definition of 'good husbandry'. Virgil does not present any guarantee of ultimate knowledge, success or immortality. Humans and animals are allowed to merge. Virgil's song is that of turning the incompatibilities of various philosophies into an unresolved, yet patterned, whole.

The poems of this chapter were written from the perspective of a sympathetic connection between humans and animals. Nearing midsummer, Highland Perthshire, The Silver Stag and Betrayal, were written after deer-hunting trips at Trinafour, in the Scottish highlands. The Silver Stag exploits the medieval metaphor that a hunted stag is comparable to the crucified Christ. The title of this poem comes from a poem by Kathleen Raine, where she uses the metaphor more directly. Betrayal is based on a local legend of a clansman who drowned his wife in a cage at Lake Con. Sympathetic is about my father, in this poem and the Progeny Sonnets, hair became an important symbol of human-animal connection and difference. The Herd Sorts Pinecones was based on conversation with the herd concerned and finally McFarland's Equation of Suffering begins with a theoretical model which was published in 'The Problems of Animal Behaviour' (McFarland 1989).

Poems:

NEARING MIDSUMMER, HIGHLAND PERTHSHIRE

BETRAYAL

THE SILVER STAG

SYMPATHETIC

THE HERD SORTS PINECONES

McFARLAND'S EQUATION OF SUFFERING

*Note: poems have been removed for reasons of copyright.*

## 6.1 Poetic Bonds of Virgil's *Georgics*

Publius Virgilius Maro, Virgil, was born in 70 BC near Mantua, the son of a farmer. He was educated in Rome, where he encountered Lucretius' *de rerum natura* and later himself joined an Epicurean colony in Naples. On the face of it, the *Georgics* is a didactic poem on the agriculture of crops, trees, animals and bees, and follows the tradition of Hesiod, Cato and Varro. However, Virgil was deeply engaged in dialogue with Lucretius, just as Lucretius had been inspired by Empedocles. The *Georgics* are a thoughtful response to rational Epicureanism. There is a religious tone in the beatitude formula '*felix qui...*' that is: 'blessed or fruitful or fortunate is he'. With this phrase, Virgil nods towards Lucretius, but also sets the scene immediately with a juxtaposition of the rational with the mythological; the role of rational planning and control with that of fate:

Lucky is the one who has mastered the causes of things  
 who no longer fears the relentlessness of what may happen,  
 who grinds underfoot the turmoil of Acheron's desires;  
 but fortunate too is the one acquainted with rural gods,  
 Pan and old Silvanus and the sister Nymphs.

4:490-494

Clearly two causes are being claimed, both are successful in meeting the challenge of Acheron's hell, (nicely contained in line 492), although in different ways. Virgil is clear in his intentions to write on both causes and mysteries. So in the *Georgics* and *de rerum natura*, together, a dialectical conversation is maintained. Wherever Lucretius leaves a potential conflict in his reasoning, Virgil exposes and plays with it; where Lucretius calls the reader to be free from the tyranny of passion and irrationality, Virgil shows that passion is vital and human reason is limited. In the *Georgics*, 'the clear and certain contours of the Epicurean universe are blurred' (Gale 2000). In contrast with *de rerum natura*, the gods are reinstated. A Virgilian god is not like a Lucretian atom. In Virgil's Pagan-animist universe, both gods and humans are seemingly ruled by unknowable forces of nature. Humans, such as Virgil's patron, Octavian, can take on the role of gods. The interplay of gods and humans, secular and divine

may initially seem to be an archaic naiveté, or a hollow literary device. However, these characters in their personification of qualities and values can be juxtaposed to create a vibrant interplay which tests relationships between different ideals. They function as symbolic reminders, for example, of the nurturing, beneficial qualities of the earth, since the names are often derived from mountains, rivers, and other specific, valued places. They remind us that humans are not in charge.

One senses that, for Virgil, truth and reason come in more than one variety. We can see a clear contrast with the monistic tradition as has been represented by Baconian science. Virgil's countryside has many gods – there is no representation of a single, humanly defined, Divine Truth or ultimate Good. It is interesting to note that Bacon quoted the above beatitude and, equally interesting perhaps, that he did not continue past *Acheronis auri* line 492. Bacon's point, in keeping with his promotion of the Advancement of Learning, is that Virgil 'did excellently and profoundly couple the knowledge of causes and the conquest of all fears together' (Bacon 1998, 1:viii:1). For the purposes of this thesis, the beatitude passage serves as a motif for Virgil's negative capability, his patterning of ambiguity. 'A paradox is presented as a solution, rather than a problem' (Gale 2000, p.14). Virgil highlights what is essentially still unknown, despite learning. He renders all types of immortality tainted. He allows the categories of living things to merge, accepting this risk, that death is tragic for all beings. His gods are vulnerable, problematic as well as praiseworthy. Blessed is the man, he seems to be saying, who accepts the patterning of shade, as well as any single enlightenment.

Virgil, then, provides another version of husbandry, one which is less certain, more sceptical, yet also more open. It is a husbandry that comes from a love of nature. This is demonstrated, not by reductive analysis, but by synthesis into harmony and so Virgil achieved the sort of immortality he hoped for:

I too must endure, must become the voice  
that overcomes the earth, that passes the lips of others.

3:8-9

Virgil's flight is both philosophical and grounded in dirt and bones and the subjective experience of being alive. Throughout the *Georgics*, the verbs of life such as *natio* (to be born), *surgo* (to rise, spring up, grow tall), *libero* (to be fruitful), *laetor* (to flourish, to rejoice, be glad, to luxuriate), *luxurio* (to flourish, fill out, behave skittishly), *curruo* (to fall down, collapse, drop, rush together), *morior* (to die, faint, wither, languish, decay) apply to all living things. Whereas Lucretius' universe depends on miniscule, mechanical swerves to join atoms; Virgil's universe does not consist of pieces which need to be joined – it is already whole, because it is alive. So the verbs of husbandry apply to the activities of humans, animals, plants, and nature herself:

*colant* – to come together

*cultor* - to dwell, farm, till the land, worship

*ducto* – to lead take, be in command, chain, draw, pull

*duco* – to lead cattle or troops, season, to trace, to orbit, to charm

*faciunt* – to make, build, do, compose

*fatigo* – to exhaust , wear out, worry at, work persistently

*fructus* – to enjoy what one has produced, to be fruitful

*obtunsior* – to batter, to assail

*produco* – to lengthen, prolong, bring forward, produce

*sulcos* – to drive a furrow

*tundo* – to strike, beat, buffet

It is thought that Virgil's father's estate had been given over to war veterans but later restored to the family by Octavian (Wilkinson 1982, p.14). This is why Octavian's role as ultimate patron of the *Georgics* is apt, and no doubt why Virgil's poetry continues to resonate with those who love their homelands:

Nod to my adventure, compose from the outset, my bold path  
the rough, rural way – step forward, be my advocate.

1:40-42

The *Georgics* elevate Octavian, who was to become the Emperor Augustus, to the level of a god. This flowing together of secular circumstances and the mythological aspect is characteristic. But equally, Virgil makes the gods fallible,

human. Here Virgil is suggesting balance, calling for a middle ground. It is an appeal for Caesar to exercise restraint, to become the 'author of fruits' (Wilkinson 1982, p.58) by exercising both enjoyment and restraint:

To that end, you who in the near, uncertain future  
may join the glorious band of gods, Caesar,  
or, if you wish, may visit cities, attend to lands,  
become, as the whole earth turns, the one  
who reproduces fruit, who governs even seasons,  
who grasps from Venus her garland of myrtle;  
you may rise, a sea-god to still tempests, uniting sailors.

1:24-30

Virgil is also undoubtedly referring to his own task, which is ultimately one of joining. Virgil is the 'master husbander' of various philosophies, various ideals, various hopes, various losses.

In the following table, I add Virgil's model as a third approach in defining a universe and in shaping husbandry within that remit. As a way of summarising their differing approaches, I have termed Lucretius the scientist, Bacon the puritan, and Virgil the psalmist. Lucretius represents a scientific understanding of the world based on detached, rational human contemplation. Bacon, although commonly viewed as a founder of modern science, comes across in his writings as a puritan, for example, in his seeking for singularly defined truth, based on objective measurement. Virgil is a psalmist because of his fluid song-like approach to language, knowledge and goals. In his version of the universe all living things experience both joy and suffering.

**Table 6.1 A Comparison of the Lucretian/ Epicurean, Bacon/ Modern and Virgilian/ Animist Universes**

Approach	Lucretian/ Epicurean Universe	Bacon/ Modern Universe	Virgil/ Animist Universe
Overall outlook	Lucretius 'the scientist'	Bacon 'the puritan'	Virgil 'the psalmist'
Basis of unity	atomism – everything ultimately composed of atoms in motion	monotheism and dualism – natural realm giving insight into the divine; or, one hidden reality causes the known realm; positivism – natural laws	pluralism, animism, many realities; both reason and natural deities
Basis of rationality	both reason and senses as evidence, although 'atomic reality' is hidden from direct sensory evidence; analytical and empirical	quantitative depiction, 'number, weight and measure'; natural cause and effect laws; analytical and empirical	natural patterns and flux
Religious or secular influence	materialist and secular – religion seen as a negative influence	developed from patriarchal monotheism and puritan ethics	natural deities invoked
Aim and justification	to achieve peace of mind, transcendence	to understand the workings of nature and thus influence	both <i>labor</i> and <i>canere</i> : to work and to sing, to be

		events	part of natural harmonies
Metaphysical position	nature explained in natural terms, materialistic	natural laws underpinning reality	nature is the reality, not necessarily open to human intellectual understanding
Autonomy given to natural objects	yes – free-will of even atoms is emphasised	tends towards determinism of cause/effect	all living things share certain qualities; both determinism and free-will are open to question
Human sensory experience	valid as evidence, although 'atomic reality' is invisible	viewed as deceptive objective measurement, models and laws preferred	subjective experience emphasised, suffering and happiness
Human-nature relationship	value placed on atunement with natural events	value placed on control of natural events – anthropocentric	value placed on atonement with natural events, not anthropocentric but anthropomorphic in portrayal of nature
Human-animal relationship	animals as mirrors of humans, sensory evidence unites experience,	reason separates humans and animals, relationship is hierarchical, control-orientated	close, subjective, involved



	domestication of mutual benefit		
Attitude towards future	fear of future is unnecessary, events cannot be influenced, cyclical patterns emphasised, return to atoms	progressive attitude, focus on improvement, innovation, profit	cyclical patterns, death and renewal inevitable
Attitude towards poetry	poetry sweetens the message, persuades and appeals to the senses e.g. through sound. words/ letters can symbolise atoms	suspicion of language and imagination generally, (though Bacon quotes classical poets), functionality and single truth is what matters	part of natural harmony
Advantages of approach	inclusive, non-superstitious, allows free-will, not controlling, no false 'scientism', disinterested interest	advances of quantitative sciences, increased productivity, less superstition	realistic in terms of expectations, events and complexity of life as it is experienced; self-fulfilment as part of nature
Disadvantages of approach	tends towards atomistic, interpretations of complex situations, individualistic detachment; over-	mechanistic emphasis on control and manipulation, humans given 'divine' mandate to intervene for profit; models and laws	no single ultimate truth is presented, may be dismissed as 'pagan mysticism'

	emphasis on 'touch' as evidence, nature ultimately denied certain attributes	are intellectually detached from everyday experience within nature; nature is ultimately denied 'free-will' and autonomy	
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## 6.2 The Divinities of Husbandry

We saw that Lucretius began with an invocation to Venus, in emulation of Empedocles. In a similar way, Virgil recalls Varro's twelve patrons of husbandry, but he mixes and matches his own set of deities. Varro's twelve were: Jupiter and Tellus, (father rain-god and mother earth); Sol and Luna, (for direction in planting and harvesting); Ceres and Liber (food and drink); Robigus and Flora (trees and flowers); Minerva and Venus (olives and gardens); Lympha and Bonus Eventus (healing waters and good event/harvest). Jupiter or Jove, the rain-god, is missing from Virgil's initial list, though he appears at other times in the *Georgics*. Jupiter is one essential half of the divine marriage of sky and earth, the rain-giver. Virgil (re)introduces other deities, for example, Neptune, Pan, Silvanus. Other literary characters are alluded to: Aristaeus the farmer/bee keeper is especially significant in book 4. The story of Aristaeus, Orpheus and Eurydice can be used to ponder the types of immortality, the place of individuals in society, the sacrifices which a farmer has to make to ensure renewal. Aristaeus' life's work is contrasted with that of the singing god, Orpheus. Each achieves success (immortality) only indirectly, partially, at great cost which is reconciled.

The literary nods to Varro and to Hesiod are required and obvious in the *Georgics*. However, a close inter-textual association with Lucretius' *de rerum natura* often resides in the precise Latin words and phrases and is therefore

more elusive. In a close reading, the classicist Monica Gale has drawn attention to many examples of this hidden conversation. For example, the word *divinitus*, she explains, is a Lucretian catchphrase (used as he denies divine intervention) but otherwise rare in Latin poetry (Gale 2000, p.7). Therefore, when Virgil uses *divinitus*, it acts as a marker, alerting a reader to the connection. He equally uses the word to refute the idea that crows have a divinely inspired foreknowledge of the weather. There is surely humour when he immediately mentions Jupiter, who herds the clouds (1:415-423) (Wilkinson 1982, p.70). Jupiter also institutes the farmers' requirement for labour and skill, he is associated with the end of a spontaneous 'golden age' and the institution of work, the father of husbandry:

The father himself has come to conclude

that the way to cultivate is rarely easy

1: 121-46

The wedding of earth and sky is an ancient universal myth, occurring in many different traditions, not just in classical European literature (Fowler 2000, p.218). We have already seen the poetic power of Lucretius' invocation of Venus and his use of the mythical marriage of Jupiter the Sky God and Mother Earth, but we have also already noted his cautionary warning that these sorts of metaphor were not to be taken literally. Yet, it is also clear that, despite Lucretius' striving towards a materialist, scientific depiction of the universe, certain attributes of the gods crept back in – the notion of immortal, universal entities, which form the creative basis for all that exists. Equally, although Bacon's ideals developed into a modern science which was secular in remit, there was an underpinning religious mandate – to seek puritan truth. In both cases, there were implied values which helped to distinguish between worthwhile endeavours and pointless, frenzied activity. It could be argued that both the models of Bacon and of Lucretius suffered in an attempt to define one ultimate truth.

Virgil, playing with Lucretius' strictness and the Roman didactic conventions, reintroduces many divinities. These are gods and goddesses rooted in place: particular islands, mountains, and woods, made sacred. Virgil is the ideal patron for ecologists, because he understands things as a whole, yet also the

sanctity of specific places. Elsewhere in the *Georgics* there are suggestions that these divinities are not necessarily omniscient, nor are they necessarily different from ordinary humans. Aristeus and Orpheus, for instance, in book 4, respectively denote the fruitless sterility of a 'work ethic', and the inability of poetic song to save a cherished life. Or, we might phrase Virgil's version of things more cheerfully: 'spontaneity and cultivation exist side by side' (Thomas 1988, p.72).

Despite his symbolic emblems, and the outrageously wide net which he casts for his opening invocation, Virgil's universe, of the worlds gathered in this thesis, is arguably the one most closely based on nature. The source of his 'enlightenment' is nature. For Lucretius, the light of the world was Epicurus, (*O tenebris tantis clarum extollere lumen....*); for Bacon it was puritan control; for Virgil, light comes from the sun and moon and this is expressed poetically:

You: bright, generous  
Lights, engraving the sky, you charm the year home

1:5,6

So, the later part of book 1 stresses the natural signs given by the seasons and constellations. These signs, as given by Virgil the singer, are a reminder of the other sense of *cantus* – to sing was to foretell, but from natural signs:

It's not for nothing that we scrutinize the rising  
of the constellations, obedient to the four-spliced year

1:257-8

If in truth, the sun habitually scorches past  
and the moon in sequence returns its gaze  
then rest assured, the nightfall cannot seize tomorrow.

1: 424-6

Virgil, whilst tending towards myth, mystery, connectedness, is equally grounded in his dealing with natural reality. He reasons about the growth and

reproduction and death of living things from an internal position – these events order all. He preserves mystery, awe, praise of life as it is lived, not as it might be in an idealised future. He balances descriptions of Bacchanalian productivity with war, plague, natural disaster. Virgil was a poet with a purpose in reclaiming his homeland, but he did so constructively, by producing poetry with which to reason with Caesar. Art and work and life, for Virgil, are not separate. So his universe is deeply poetic, even when he is seemingly at his most direct, there are multiple layers of meaning, jostling for attention. Often, as with the verbs, it is a single word which connects the natural world. This is the same poetic sensibility that we saw in the Sanskrit Rig Veda: nothing is singly named, the actions of life unite nature. Precisely ambiguous writing reflects and husbands a fluid, visceral universe, where *bonus eventus* can be wished for, but not necessarily solely humanly orchestrated.

Therefore, the reasons why Virgil's *Georgics* are relevant in this thesis of seeking bonds are as follows:

If a 'science of qualities' (Goodwin's term) and a 'science of relations' (Serres' term) or a third place between extremes is to be developed, Virgil has already led the way. He shows that the key is in the language already. Vernacular, everyday words preserve ancient and contemporary everlasting truths about the natural world and the place and interactions of humans within it. As Lucretius said, ordinary words are like atoms – creative, omnipresent, everlasting. As Virgil teaches us – they are like animals to be cherished and tended. The skill of being precisely ambiguous is a poetic one, it involves working with words rather than tying them down to fix single meanings. The meanings and the tools are in language already, it is a matter of being alert to the possibilities. This is also the insight expressed by Hilton – that art arises when the idea and the medium are allowed to work together (see Chapter 1.1 (Hilton 1961)).

Secondly, Virgil reminds us that these life events – birth, growth, aging, death – are shared by all living things, since all are subject to mortality (see the poems *The Silver Stag*, *Sympathetic* and *Mc Farland's Equation of Suffering*).

Thirdly, different philosophies and ideologies can be joined creatively. Many viewpoints are valid, none need be applied dogmatically or destructively. There are points in the *Georgics* which strikingly prefigure the Christian tradition of

Christ's death and resurrection, perhaps simply because cyclical, natural truths have always been there for observation.

These points on a page seem obvious, certainly they are known where people attend closely to nature. But the reality of achieving such a fruitful life of connections is not always easy. As outlined in Section 3.2, the striving for wholeness defines the poetic quest. Mary Midgley, in agreement with other philosophers, has stressed that modern science seems 'embattled', 'all-conquering' and 'anti-natural'. In a way which is especially apt for this thesis she writes:

An interesting change of myth does seem to have been occurring here, as the Sky God – whom many cultures see as loving and working with the Earth Goddess – began to be seen as finally rejecting her, viewing her as a dangerous rival and insisting that he must reign alone.

(Midgley 2002, p.44)

Other writers would notice that even the ancient creation myths gave priority to the male Sky God, the problem of balance is not necessarily a modern problem (Sagar 2005, Vico 1968). It cannot be correct to have nature written out of her own science. Nature, is not an 'enemy to be crushed'. She is continuous and self-patterning, and not necessarily to be contained by human endeavours. She can be understood in Virgil's intuitive assumption of fluidity between all parts of nature, and his constant interplay of symmetries. She is invoked, in fact, by both Virgil and Lucretius to represent the force of love as a counterbalance to strife. This 'love' is not simply a sentimental human emotion, it is the strongest force that there is, that of creation (and indeed, at times, destruction). This force is not invented by, nor centred on, humans nor does it have human needs as its goal, nor can it be fully understood by human intellect.

The role of poetry in successfully drawing on both modes of thinking and in thoroughly integrating that in the use of language was also shown by Lucretius, though he veered towards reasoned argument and a logic of categorisation. Nevertheless, he continually based his argument on sensory experience. He revealed nature's active role by insisting that she herself is active and has free-will. His scientific materialism was as rational as he could manage, yet he also

thoroughly grounds human-beings as part of nature – as part of the combining and dissolving of atoms. As we saw in Chapter 5, in *de rerum natura* there is no detachment between spirit and body, they cannot be separated, just as the scent of frankincense is fundamentally associated with the material frankincense.

We can recognise in the *Georgics* that Virgil tends the husbandry myth by constantly demonstrating the harmonious union of the Sky God and the Earth Goddess. The myth shows that both ways of knowing, scientific/analytical and poetic/intuitive, are necessary, neither alone is sufficient. In truth they are intimately intertwined, they come together and separate, a cabled pattern. It would be a misunderstanding to literally see one type of knowing as being ‘female’ and one type ‘male’ – since all humans function using both skills. Virgil’s intense personification of deities is matched by his equally intense personification of all living things. As we saw in Section 3.4 on husbandry and holism, plants and trees are depicted as mothers and children. The underlying reason for this is that all living things in Virgil’s version of husbandry are animated by the same life forces. To reiterate, it is poetic intuition which recognises these connections, making them accessible for the scientific, analytical mind to pursue for further understanding. In the following section we will consider the human-animal relationship as depicted in this way.

### 6.3 Virgil’s Humans and Animals

Virgil’s depiction of animals and indeed all living things has been described as ‘strikingly anthropomorphic’ (Gale 2000, p.94). Virgil, however, is not conducting a superficial comparison between humans and animals, he does not necessarily delineate them as separate categories. The *Georgics* demonstrates a deeply held intuition that all living things are intimately connected by the same natural patterns. This is indeed the same poetic intuition that has informed modern biology, for example it allowed Darwin to propose evolutionary continuity and led Goethe to recognise the underlying morphology of organisms (Richards 2006).

It is informative to compare Virgil’s attitude with Lucretius’ depiction of animals in *de rerum natura*. In the latter, as we saw in Section 5.4, animals were shown

to be like humans – they also dream, love, strive for food and shelter. In the Epicurean philosophy, animals were mirrors or models – they demonstrate ‘lives lived in accordance with nature, and uncontaminated by false values’ (Gale 2000, p.90). Lucretius’ animals also function as metaphors which make visible the invisible nature of things. They are natural symbols of facts. Racehorses illustrate the principle of free-will and animal examples explain the workings of the senses. If we put aside the current, religious undertones of the word ‘soul’, we can see from Lucretius’ perspective that the soul is physical, it is embodied and therefore, animals also have souls. The qualities of souls, as beings, are expressed using the symbolic elements of fire, breath and air. Animals provide examples. The faculty of human speech is equivalent to abilities held by other species, whether involving horns, claws, teeth, wings, and so on. In terms of ethical response, it is a waste to sacrifice animals to the gods, foolish to use them in warfare, they cannot be controlled or subdued that much. Lucretius’ view of other animals was informed by affectionate interest. The capacity for human reason though, for Lucretius, is a crucial distinguishing mark. Reason provides hope for liberation from irrational fears and superstitions, it was the driving force behind the whole composition of *de rerum natura*, that great ‘monument to reason’.

Virgil’s human-animal bond is differently presented, it is too deep at times to call ‘metaphoric’. There is a fundamental unity of all living things, all are animated by the same breath. Virgil is much more ambiguous about the human-animal divide. He is ambiguous about the enlightenment that reason provides, and the ultimate value of work. Since birth, growth, age, and death are the same for all, even plants are spoken of in these terms. Yet there are practical implications – one can notice how best to propagate and to nurture seedlings and can arrange the breeding of livestock carefully by tending and training the young appropriately. Ultimately this work is hard, it may well end in sickness and death. Hope, in the *Georgics*, rests, not on human labour, nor on intellectual reason, but on nature’s cyclical pattern of renewal. On the one hand, the death of an individual plough-ox is to be mourned as much as that of a ploughman, on the other hand, individuals do not survive. Only the societal group as a whole may persist and this is the lesson to be drawn from the colony of bees in book 4.



At other times, however, in the *Georgics*, the animal husbandry relationship is presented in a more hierarchical fashion. The farmer is said to enslave (*seruitio*) young animals:

For the long haul of field work ahead,  
the young are to be shaped from their raw state,  
tamed and encouraged, their spirits composed,  
all when they are tender, pliable and quick-witted.  
First hold their necks loosely bound in thin osier hoops,  
thus from freedom they slip into service

3:163-168

The farmer must exert control, nevertheless he is not in sole control. The natural world as portrayed in the *Georgics* is mysterious, a source of wonder, death and loss are turned around by new birth. This reversal of fortune is most striking at the close of book 4, when the shepherd Aristaeus is told by the goddess Cyrene to sacrifice four bulls and four heifers:

With no time to lose, he acted on his mother's instructions  
and came to the temple, leading the chosen four best bulls  
prepared and displayed their bodies on the altar  
with four supple heifers, their necks never yoked.  
Then, when nine consecutive sunrises had tinged the sky  
he returned to the place, to that tomb of Orpheus.  
There, as truly as he had been told – a miracle –  
the shrill buzz of a swarm, from flesh,  
as if in afterbirth from a womb, wild bees seething  
up and out of the ribs and away – a dense cloud  
that swelled to the tree tops, melted from the twigs,  
and deluged down in bunches of sweetness.

4:548-558

The incident could also be read as a response to Lucretius' rational arguments against vain sacrifices. Certainly it is the fact that the prime animals are so valued that makes them suitable to use in sacrifice. From the perspective of

Aristaeus, they have not been thrown away nor given lightly. As already mentioned (Section 6.2), such passages share a strange undertone in language and symbolism with the Christian story of resurrection – and doubtless reflect an archetypal myth based on life and death, and the renewal of days and the seasons. Virgil's story reconnects us with the notion that aspects of nature are not open to human intellectual understanding:

What God have we here, Muses, who forges such bonds?  
Who makes us embark on such enterprising madness?

4:315-6

A fuller discussion of the human-animal connection in the *Georgics* is given by Gale, (Gale 2000), but, for the present thesis, we have been asking: how can we present animals as fellow creatures, as whole agencies? Virgil provides the most animated of examples. The basis of Virgil's genius is in the language itself. Mary Midgley uses the metaphor of tools for words: they have been developed, honed and sharpened throughout centuries:

Words like mind and body do not have to be the names of separate items. They, and the other many sided words that we use for these topics – words such as care, heart, spirit, sense – are tools designed for particular kinds of work in the give-and-take of social life. They are essentially vernacular, and that is just their strength. They have been shaped by the everyday context of experience, which is just what we are trying to talk about.

(Midgley 2002, p.11)

We can add the word 'soul' to the list above, as another word which is needed to express wholeness. Soul and spirit do not refer to the same thing, although both express qualities of wholeness. For example, spirit might be said to be dynamic and associated with 'life pole', whilst the soul is static and self contained, associated with the 'death pole' (Lehrs 1985).

To Virgil, and a great many other writers who write poetry about husbandry, words become not so much 'tools' but as live creatures themselves, to be

husbanded. Virgil continually reminds us that words are not abstract disconnected entities. In his use of language, Virgil Publius Maro is *maritus* the husbandman and joiner. *Maritus* means to provide with a husband, to wed, to breed, to join vines with a supporting tree, a male kept for breeding. He operates with the principle that Midgley mentioned – one word does not have just one meaning.

*Anima*, for example, is the origin of the English ‘animal’. *Anima* or derivatives appear in the *Georgics* thirty three times. *Anima* is breath, the air breathed by an animal, breathing as a characteristic of life and not death. It also refers to breathing ones’ last breath. It is the quality or essence of life, the vital principle, the soul. *Anima* is also air, one of the four elements. It can mean a living creature other than man, a brute. *Animo*, the verb is to quicken, to make alive, to revive, to animate. *Animulus* is a term of endearment – heart or soul; *animula* is a ‘little life’ (reminiscent of Van Leeuwenhoek’s *animulcules*). *Magnanimosque* 4:4 and *magnanimum* 4:476 refer to the quality of boldness, being spirited, brave, and noble. *Anima* belongs to a set of related words which show the earliest human cognitive connection between breathe, wind, spirit and life (Ayto 2001, Lehrs 1985). It is possible to recognise analogies between Christian symbolism and Virgil’s holism: the breath and flame of life later being poetically personified as the Holy Spirit.

Animism, the belief that everything in the world has a soul or spirit, is dismissed perhaps as supernatural in a secular society. However, the idea that everything alive has autonomous worth, and is united, is not so unscientific. *Anima* connects with Lucretius’ understanding that souls are mortal, and the thought that nature’s agency is in charge, and that the universe is not essentially anthropocentric. The word is expressive of holism. As we saw in *de rerum natura*, *animus* also referred to the mind as the organ of thought, the seat of consciousness. Associated with the mind *animus* are courage, pride desire or anger. Occasionally Virgil writes *animadversis* ‘let me turn your mind towards’ (3:132). And he writes, when turning from horses and oxen to consider sheep and goats, that he doubts whether his verses are enough to animate such small creatures, to ‘invest them with dignity’ but ‘love transports him’ and Pales inspires him (Wilkinson 1982, p.109).

What then distinguishes humans and animals? Lucretius believed in the power of human reason, to dispel fears, with the implication that reason separates humans and animals. Paradoxically, as Gale points out, reason liberates us so that we can live more truly natural lives, like the animals (Gale 2000, p.94). This provides an example of Virgil rendering a Lucretian tenet problematic. Human reason is not so successful in the *Georgics*, men at times behave like men behaving like animals. Passion, violence and war are capable, Virgil suggests, of overcoming reason. The passions and love (*amor*) are presented as destructive, fiery, often associated with the horse (3:242 and 319-242; 3:95 – 100 and 119; 3:250-4 and 3:266). Such indomitable passion is the cause of battles, yet is an aspect common to all living things. Love, then, in Virgil's world, is an enemy of reason. Yet this spirited passion is an attribute which a breeder would select to work with, since such eagerness and courage is essential for success. The essential fire of the horse, as used by Virgil, is an echo of the Rig Veda hymns which associate the flames of the sun with horses (Section 1.2). At the plague episode, which ends book 3, when the horse is dying and is given wine, it recovers, only briefly, its innate fieriness. The language here echoes the language which Lucretius uses for the destructiveness of unrestrained passions:

The horse, once the hero, now stumbles  
his eagerness for grass and spring water gone  
he fretfully paws the ground, his sky-held head  
now hangs discouraged, in that sweat between life  
and death, his pelt doesn't warm to your touch,  
and before the day dies, the signs progress to worse,  
his eyes burn, his breath drags in wearily  
he moans all along his length  
he coughs up blackened blood  
it clogs his throat, wells from his nostrils,  
harsh sobs possess his tongue.  
In desperation some thought it would help  
to moisten the throat with wine,  
dribbled gently in through a horn  
but this makes them burn all the more,  
with a freshly ignited frenzy –  
O, if only the good were spared

and madness reserved for the wicked –  
yet with their own teeth they tear their limbs raw.

3:498-514

Lucretius, if we recall, would have no centaurs in his rational world. Virgil creates them in the sense that men and horses are driven by the same breath, urges, passions, plagues, and by air and fire, the chaotic elements. The ancient emblems of air and fire are formless, gaseous, and uncreated (as opposed to earth and water which are formed, created). Air and fire can remind that human civilization is fragile and liable to dissipate into chaos. This is in concord with Lucretius' vision of a return to atoms and the indomitable character of nature.

At the outset of this thesis, husbandry was presented as a way of looking at the world: a place of union between male and female, human and non-human, grounded realities and poetical truths. Virgil provides a prime example of the way in which holism can be expressed in poetry. To give *Agricultura* the power of song would be, when applied to animal husbandry, to rediscover notions of animals as whole, self-unfolding beings. It would be to recognise certain qualities inherent in all living things. Particularly it is our activities, the verbs, which connect all living things. As discussed in Chapters 1-3, conventional scientific writing tends to represent organisms as functional objects rather than active beings. In the final chapter, we will return to the early questions posed in this thesis – what is good husbandry? What counts as fruit, as profit? And the wider questions about science – how can a science which takes account of qualities and relations be developed? How can a third place, that fluid place which involves both praise and lament, be shaped in writing?

## **Chapter 7: Conclusion: The Third Place**

- 7.1 Husbandry of Wholes
- 7.2 The Third Place of Being
- 7.3 The Attributes and Qualities of Nature

This chapter concludes that all things, including Lucretius' atoms, whole organisms and the earth as a whole, may be considered to maintain themselves in a third place state, between a striving 'to be', to preserve the self and a longing 'to create', to engage with others. Secondly, this chapter concludes that, although Virgil was said to have given *Agricultura* the power to sing, this knowledge came from within nature. This source of inspiration is still open – our research can sing, if it is being taught by nature, directly from experience – this is another version of 'enlightenment'.

Associated with this chapter are the first two poems, which were written at the outset of the research in 2002 (Revenge Tragedy and Quarry), and the final one, Garden, written in Sept 2007. These poems came from autobiographical circumstances, however, they can be read in other contexts. Revenge Tragedy was based on a performance of Webster's The Duchess of Malfi which was staged at the Rep Theatre in Dundee in October 2002. There are several poems which deal with anthropomorphic insights (Hybrid and Cleave). I have used the verb 'to sing' as a metaphor throughout this thesis, and To a Man Cast in a Hard Role (2002) and Shibboleth (2007) are offered as explanations of what it might mean 'to sing'.

Poems:

CLEAVE

REVENGE TRAGEDY

HYBRID

QUARRY

SHIBBOLETH

TO A MAN CAST IN A HARD ROLE

GARDEN

ODE TO THE POMELO

*Note: pages with poems have been removed for reasons of copyright.*

## 7.1 Husbandry of Wholes

A thesis of husbandry must span at least 12,000 years, albeit briefly and only touching down at certain points. From the first domestication of sheep, goats and cattle, to the twenty-first-century mass production and consumption of animal-based products, the relationship between humans and animals exerts a fascination – they are our close neighbours, yet still they are ‘Others’. As such, a study of the human-animal relationship serves to give general insight into the relationships between humans and other Others, including nature. For this reason, at times the animals of animal husbandry are set to one side and the relationship of husbandry becomes the focus. Husbandry, in its original sense, is a joining together, based on dwelling in a particular place. The remit of this work is historically wide. The even wider intention of this thesis was to husband wholes – to connect science and poetry; self and other; public knowledge and private experience.

Husbandry – in the sense of our connection with the earth – ought to be tended and renewed. The drawbacks of industrialised farming are well known in ‘late capitalist’ economies. Definitions of ‘Good Husbandry’ may have changed historically, and may not all be equally appropriate for current times. However, there is general agreement on the importance of husbandry as a concept of careful farming: ‘We are not farming in a specialist capsule or a professional department; we are farming in the world, in a webwork of dependencies and influences more intricate than we will ever understand’ (Berry 2005). This chimes in agreement with Columella – ‘my last days may overtake me before I can comprehend the entire subject of rural discipline’ (Columella 1960, p.5)

As discussed in Chapter 4, there is a deep and intricate connection between modern science and industrialised agriculture, both of which developed on the basis of particular values associated with good husbandry – namely: individual innovation, profit-related productivity, quantitative measurement, puritan truth, and control of nature. Ideals of the earth as something held in common (a ‘commonwealth’) and traditional stewardship were down-played. Bacon provides an example of a positivist, pioneering attitude which has continued to underpin modern science. In retrospect, however, his ideals as shaped by his historical context, sound rather one-sided. Nature herself is not well represented in the science relationship. It is possible with hindsight to look at



the changes which the sixteenth- and seventeenth-century facilitated, but also to notice aspects of true husbandry which were gradually set aside. These aspects relate to a close, empathetic relationship between humans and nature, which includes connections which cannot be articulated quantitatively. Such knowledge-from-within has not been irretrievably lost, it is accessible through experience by people who work closely with the land and with animals, it is also preserved in the poetic capability of language.

The purpose of this thesis is to demonstrate that poetic wisdom can help in developing a science of husbandry (and a husbandry of science) which considers qualities, relations and wholes. If scientific research is a human-nature relationship, there is surely potential for listening to and giving voice to nature. A certain linguistic style, however, has evolved to reflect objective detachment. This style does not readily depict a good researcher-researched relationship: there is little sign of active, natural collaboration in its true context. Yet, science, whilst conducted out of 'disinterested interest', is also surely coupled with a respectful love of the natural world. Research writing shapes the research itself, because it shapes the imaginative vision which drives the work. Scientific technical discourse is still, for the most part, articulated in terms of Bacon's puritan ideals – firstly, that truth is only to be found in number weight and measure and secondly, that that nature's secrets are to be revealed for human purposes (profit, power, the extension of empire). Much of Bacon's rhetoric came from his imaginative zeal to shape a new world, whereby nature could be conquered. The basis of this thesis is to suggest, rather, that it is the human-nature relationship which should be shaped. The 'good' of good husbandry is in the relationship and involves the goodness of nature herself. The relationship could be shaped, tended and nurtured within the science of husbandry. We have seen that husbandry is a third place between extremes. It is a balancing act between intellectual knowledge and practical reality, science and art. Bacon's utopian vision never came to fruition and the task of shaping husbandry is always ongoing.

Science, no matter how it is rhetorically presented, is a relationship between human and nature. It is useful at this stage to reconsider use of the adjective 'scientific'. Mary Midgley has provided a useful summary, explaining that in recent times two distinct uses have emerged: firstly 'scientific' as a reference to work which is methodical, thorough and professional, not vague or 'amateurish'

(Midgley 2002, p.144). As she points out, history may be researched scientifically under this meaning, where 'scientific' refers to a certain set of values and is used as a term of approval. The second use of the word science is factual – that is, concerned with the natural sciences, the physical and the biological. When there is confusion between the two meanings, an unfortunate misunderstanding occurs – that only the methods currently used in the natural sciences are correct, approved, rational. My preferred understanding of the term science is closer to the older term: natural philosophy, knowledge which is concerned with the natural world, but derived from a relationship with nature. Where the relationship is one dimensional, the knowledge is limited.

The methods, values and remit of science have been thrown open to question by many commentators, and their charges warrant answers. They relate to links between science and power equalities (an ongoing sort of colonialism) and science as having become detached from, and therefore damaging to, nature. Most controversially perhaps, some commentators would make associations between science and violence. The issue is not an academic one – as Gieryn puts it:

So much rests on how the authority to describe and to explain nature is parsed out ...guilt or innocence, life or death, cornucopia or wasteland, utopia or nightmare.

(Gieryn 1999, p.2)

Gieryn also quotes the agronomist Sir Albert Howard, who founded modern organic farming as 'a hybrid of western science and eastern agricultural wisdom based on poverty':

The good earth lies bruised and broken while conventional science has sunk to the inferior and petty work of photographing the corpse.

(Gieryn 1999, p.326)

To allow a scientist to answer, the following is a recent description of the scientific process of reductionism as 'it might appear in a users' manual'. It is worth quoting in full:

Let your mind travel around the system. Pose an interesting question about it. Break the question down and visualise the elements and questions it implies. Think out alternative conceivable answers. Phrase them so that a reasonable amount of evidence makes a clear-cut choice possible. If too many conceptual difficulties are encountered, back off. Search for another question. When you finally hit a soft spot, search for the model system – say a controlled emission in particle physics or a fast-breeding organism in genetics – on which decisive experiments can be most easily conducted. Become thoroughly familiar – no become obsessed – with the system. Love the details. The feel of all of them for their own sake. Design the experiment so that no matter what the result, the answer to the question will be convincing. Use the result to press on to new questions, new systems. Depending on how far others have already gone in this sequence (and always keep in mind you must give them complete credit), you may enter it at any point along the way.

(Wilson 1998, p.59)

The most overtly implied value here is ‘truth’ – ‘clear-cut’, ‘convincing’ answers, leading to new questions. The relationship between researcher and researched is at least acknowledged – ‘love the details’, ‘the feel of them’. In this model of reductionist science, the metaphor of a users’ manual is insightful, as is the writer’s later comment ‘An organism is a machine, and the laws of physics and chemistry, most believe, are enough to do the job, given sufficient time and research funding.’ What is the job? In the context of E. O. Wilson’s writing, it is creating artificial life by synthesis. But synthesis is not a matter of adding analytically derived parts back together – that will never by its own merits make a coherent work of art. The whole-and-part relationship of natural things, as we saw in Chapter 3, is that every part contains the whole already, that ‘an instant is worth a thousand, bearing all in itself’ (Bortoft 1996, p.22). Nor is nature uninvolved in the proceedings of synthesis, not least, she provides a ‘soft spot’. Science is not a relationship with a machine. Is it? ‘I now suspect’, writes another commentator in relation to industrialised farming:

If we work with machines, the world will seem to us to be a machine.  
But if we work with living creatures, the world will appear to us a living creature.

(Berry 2005, p.95)

This writer continues to explain failures in agriculture because of the attempt to make the land produce, without husbandry: 'the attempt to make agriculture as a science and an industry has excluded from it the age-old husbandry that was central and essential to it'. Animal husbandry is an ancient and ongoing art and science. It cannot be wholly achieved by a superficial 'tick box' approach to ethics. Our consumption of animals is likely to increase globally, yet in our use of animals we have acted as if they are mere commodities. We have had the same attitude towards the earth and, in our consumption of her resources, we have caused profound damage. As demonstrated in Chapters 2 and 3, we have great difficulty in conceiving of whole animals and the skill requires more than analytical reason. Animals provide a bridge between what we know and what we do not know. Virgil and Lucretius have shown that they are our close teachers and healers. If we can learn to conceive of, and to treat, animals as whole beings it will help in shifting our attitudes towards the earth as a whole. There will not be any 'magic bullet' solution to our environmental problems. It is often the case that even our best efforts to live ethically can have unexpected, negative consequences, because we do not have the whole picture. This thesis is not an examination of strategies and options for making food or energy supplies more efficient, nor have I set out a new set of rules in our dealings with animals. But, just as science and agriculture evolved together in the sixteenth- and seventeenth-century, so they continue to be intertwined. I am convinced that science holds the key to redressing the situation because science holds a position of authority in our culture, it is currently standing on the 'soap box'.

Therefore, the purpose of this thesis has been to highlight the attributes of nature which are missing from science rhetoric – her activity, autonomy, goodness, and free-will. These attributes do not tally with machine metaphors. Nature might be better considered a living creature, as Berry suggests, or a composer, or a gift-giver.

How can we redress the imbalance towards a better husbandry of the earth, working within science? Values relating to profit, improvement, progress, and advance are thoroughly embedded in the workings of consumerist cultures. Such values beg questions about method and direction of measurement – whose profit? What are the criteria for measurement? Profit in one place may be accompanied by loss elsewhere. Where nature is concerned, incontrovertible evidence and proof are not always accessible, particularly with short-term direct measurement, nor can control over events be assured, nor are the ‘workings’ of nature necessarily completely open to, or as simple as, the human intellect would have them. In fact, the goodness to be found in nature is often unexpected and indirect. Such goodness catches us by surprise. The fruits of truly open-minded research are likely to be better than could have been predicted. To recall the sheep Dolly (see the poem *Valentine*, Chapter 1) the results, even in biotechnology, are works of art. But to assert that these creatures promise an assured future of triumph over disease and the defeating of death belongs more to superstition than to science. Suddenly Dolly rhetorically links with the very Lamb of God in terms of expectations!

Virgil’s *Georgics* act as a reminder that natural mysteries persist and can be represented best in myths or stories, where categories merge, where one thing becomes another, where events unfold, and some secrets are kept. Lucretius’ *de rerum natura* reminds us that science existed before the sixteenth-century ‘enlightenment’ and that it need not be control-based nor related to financial profit. Both writers are astonishingly apt for the twenty-first-century. Our concerns, interests, and passions are not especially new.

An attitude of husbandry towards the earth would involve thrift, but not in a puritan, economical sense. Rather, thrift, in the many-layered meaning of the latin word *parco*, is to act sparingly, to refrain from using an instrument or resources, to refrain from inflicting injury, to spare, not to condemn, to show mercy, to act with forbearance, to show consideration towards. ‘Profit’, turning away from a financial definition, is *proficio*: to make headway, to achieve success, to be efficacious, to do good, to help. A ‘natural’ science, not driven by narrowly defined improvements and profits, could incorporate values such as the common good, empowerment of others, kindness, benevolence warmth, reactivity. These values are extended from active nature. Other ‘scientific’ values such as quantitative proof and cause-effect certainty may at times have

to be put on hold. The ability to let things be, to allow events to unfold, is just as important: 'What matters is not the conclusion which we draw... but the fact that we are made to attend...' (Bate 2000). The goal of ultimate 'answers' is something of the puritan legacy of Bacon's utopianism.

To attend to husbandry, in science discourse and research writing, would be to find ways of depicting nature's involvement. We have gathered some cues from language and from the poetic wisdom of both Lucretius and Virgil:

- Etymology and vernacular language provides a wealth of rooted bonds. Poetic sensibility and imagination is expressed even in single, everyday words (for example, husbandry, spirit, animate).
- Wholes and relationships can be conceived within science by representing aspects of life which are held in common:
  - verbs express and allow the possibility of active connections between all living things (to be born, to grow, to work, to strive, to love, to age, to die). 'Heaven smiles', 'the wind blows' – these expressions, whilst anthropomorphic are also effective ways of communicating truths, qualities, connections;
  - adjectives can express qualities which cannot necessarily be quantified, and are intuitively or subjectively understood. A cell may well be described as 'happy' in that it looks healthy, glowing. Lucretius mentions the bitter-sweetness of honey; Virgil's fertile fields are joyful, *laetas*. Examples given by Vico include 'sad Old Age' and 'pale Death', 'in each case a little fable'. He classes these as ancient linguistic metonymy of cause for effect (Vico 1968, p.120).
- The poetic imagination is involved in science as well as art – it is the imagination that shapes the work, suggests the possibilities. But, at the deepest level, the metaphors which we use without thinking suggest imaginary or poetic logic. Some of these are clichés because they are

so ancient. To give a set of examples of poetic logic from Vico, the human body is an obvious source of ready-made metaphors in the earliest societies. Common language refers to 'the brow' of a hill, 'the mouth' as an opening, 'the bowels' of the earth, 'the vein' of a rock and so on. To conceive of a 'new' metaphor is to make a whole set of discoveries by analogy. To recall an ancient metaphor is to revisit the symbolising ability of early, but not 'primitive', humans.

- Stories, art, myths, and poems could help to shaping a science/agriculture that 'sings' or animates the subject, by means of subjective engagement, rhythm, and pattern. Many-layered meaning unfolds in these art forms. The most obvious example, in this thesis, is the divine marriage myth which serves as a reminder that all life comes from, and depends on the sun, the rain, and the earth. This is thoroughly relevant to natural philosophy.

Table 7.1 summarises a range of poetic concepts and their usefulness in knowing, and depicting, nature with 'insider' evidence. Table 7.2 shows an extension of the idea that a being is a two-fold striving to be, and a will to create. Both of these activities result in survival. As discussed in the following section, these two activities, together, define the husbandry of being, literally, metaphorically, linguistically, and factually.

**Table 7.1 Poetic Wisdom**

<b>Concept</b>	<b>Varieties</b>	<b>Poetic Value</b>
<b>Elemental qualities</b>	Earth, fire, air, water	Use of nature's own language of qualities; allows for symbolic connections, facilitates balance e.g. between reason and passion; gives a vocabulary for intuitive experience, and the imagination; the elements represent dynamic conditions, not nominal classifications;
<b>Language</b>	Verbs, adjectives, metaphors	Actions and adjectives held in common for all living things; use of variety of metaphors to renew creative analogies; etymology can access vernacular, universal poetic wisdom;
<b>Panpsychism</b>	'all objects possess singular inner experience of world around them'	Facilitates holism and an ethical imagination; removes anthropocentric mentality; avoids dualism of mind and body – concepts such as 'soul' become understood as physical;
<b>Poetic understanding</b>	Poetic connections, negative capability	exercises imagination; links historically all times and places; allows access to universal



		<p>imagination, archetypes;</p> <p>avoids dogmatism;</p> <p>freedom to test associations; and to work intuitively without burden of proof;</p>
<b>Intuition</b>		<p>Allows for understanding which cannot be proven or measured;</p> <p>encourages empathy, avoids subject-objective hierarchy; integrates the known and the unknown; allows space for tacit knowledge; silence is acceptable;</p>
<b>Sensory evidence</b>	<p>Sight, smell, touch, hearing, taste</p>	<p>Basis of engagement with reality; subjective connections are made; ethical imagination is developed; valid as evidence along with reason; the senses trigger intuition and memory;</p>
<b>Attributes of nature</b>	<p>Goodness, greatness, eternity, power, wisdom, will, virtue or strength, truth, glory</p>	<p>Nature acknowledged as self-acting, self-patterning; autonomous worth, respect, wonder awe are preserved; allows for 'feminine principles' such as caring, nurturing, sanctity of life; autonomous worth of objects and beings;</p>

<b>Deities</b>	Venus, Jupiter etc	Balance of male and female qualities; provides symbolic vocabulary; associated with value of wildness and specific places; poetic resolution rather than intellectual certainty;
<b>Animals as symbols</b>	Symbols of qualities e.g. horse symbolises passion, cattle as wealth, owl as wisdom, animals as symbols of humans in myths and fables (Aesop, la Fontaine, Kipling)	Provides a vocabulary for myths and fables; allows value of animals that is not profit-related; living things become beings which interact and impart truths; grants intrinsic worth as well as functionality, balances use and respect; facilitates connections based on human experience; encourages an ethical imagination;
<b>Subjective experience</b>	Personal anecdotes, use of 'I', historical and familial connections	Can lead to universal truths; acknowledges human source of information and human limitations; opens questions of reliability; makes reality overt rather than truth detached from life; allows reader to identify with the subject.

**Table 7.2 Poetic Associations: ‘Being’ and ‘Creating’**

<b>Will to be</b>	<b>Will to create</b>
soul	spirit
autonomous worth	action
self-containment	volition
consciousness	animation
memory	fantasy
static	dynamic
crystalline	radiant
dry	moist
death pole	life pole
nervous systems and senses	metabolism and limbs
Puritanism	animism
phosphorous	sulphurous
cold	warm
spherical	radial
strife	love
earth	sun
atom	swerve
particle	wave
mass	energy
place	act
bound	free-will
<i>hus</i>	<i>boandi</i>

## 7.2 The Third Place of Being

The qualities and attributes shared by all things are twofold, together they define what it is 'to be':

1. Will to Stay in Being
2. Will to Create

These two qualities are equivalent to those expressed by Empedocles, and others, as 'strife' and 'love', respectively. The Will to Stay in Being is represented by the atom of Lucretius – indivisible, self-contained and lasting. It is also represented by the work of Virgil's farmer in the *Georgics*. It expresses striving of unique entities to maintain existence against an external environment. It correlates with the 'earth' element of ancient thought, and with qualities of self-containment, relative coldness, unreactiveness.

The Will to Create is represented by Lucretius swerve between atoms. It is *amor* in Virgil's universe, represented by the activities of Venus. It is Virgil's verb: 'to sing'. This quality is symbolised by the sun, or the sky, expressed in the qualities of relative warmth, openness and reactivity.

Together, these two attributes define what it is to be, not because the two attributes exist side-by-side, nor because they, when added together, make a being, but because the ongoing resultant dynamic balance between them constitutes the experience of being alive – it is the dynamic third place. The third place is a fluid ongoing negotiation between Will to Be and Will to Create, which is experienced simply because the being exists. The identification of 'certain qualities which can be attributed to all things that exist' puts this conclusion at the heart of a philosophy of panpsychism, an ancient and persistent idea that was driven out of modern science. A set of qualities and attributes and their organisation into these two energies is shown in Table 7.2. The balance of energies has been also called the Polarity of Functional Systems, in an understanding that nature's universal pattern of cyclical renewal

works along these principles (Lehrs 1985). This way of thinking, although poetical, is not necessarily mystical. It addresses natural qualities, energies and experiences.

A working definition of panpsychism, put forward by David Skrbina is that 'all objects, or systems of objects, possess a singular inner experience of the world around them' (Skrbina 2005, p.16). Such an alliance might seem controversial, yet as Skrbina and Christian de Quincey have recently shown, panphysism is a viable alternative to a mechanistic worldview, since it links 'being' and 'mind' in such a way that all reality shares certain qualities (Quincey 2002, Skrbina 2005). A panpsychist view allows the nature of mind to be constituted in such a way that the human conscious experience is grounded – it belongs to the physical universe. The human mind can be then conceived, not as a problem requiring explanation, not as a phenomenon detached from nature, nor as a mechanical, determinist construction. In this sense, panpsychism is a thoroughly secular solution to the metaphysical problems of dualism. As we have briefly seen, dualism although sometimes associated with monotheistic religious beliefs, also persists in the underpinning of contemporary culture, including contemporary science. However, in a way which is quite foreign to contemporary modern culture, panpsychism allows action, and self-autonomy to be granted to non-human things. Lucretius, although he does not use the word, is clearly a panpsychist, in keeping with the Epicurean tradition. Mind and being are co-defined for him as atoms with Will. Lucretius' vision might be rephrased as a question: 'what if consciousness can dance with the atoms and give them form and direction' (Quincey 2002).

There is an interesting link here with conventional science writing, which as we saw in Chapter 3, has no problem in locating action on the part of molecules. However, this discourse tradition has originated largely by default and from a mechanistic viewpoint. In cellular and molecular sciences there is a struggle to represent the actions and qualities of whole organisms, in their striving for both survival and creative union.

Virgil's type of animism would be rejected as a pagan or a 'new-age' red-herring by Skrbina, it would run the risk of confusion between panpsychism (which is natural monistic) being confused with pantheism (which is spiritual pluralistic). However, I would counter this by saying that such literary devices

as shown in the *Georgics*, whilst they are anthropomorphic in depicting essential spirits of things and place, have value because they are not necessarily anthropocentric. Virgil's Venus harnesses certain attributes that would be missing from a purely analytical perspective. Virgil represented these deities, not naively, but as symbols of nature and indeed as real patrons, whose help he needed.

The poem *Cleave* can be read as a meditation of the role and/or problems of anthropomorphism in science. The use of human attributes and characteristics to depict non-human entities or events is often casually criticized in science discourse, yet I would argue that anthropomorphism has a role to play in allowing humans to imagine and, therefore, to connect with others. We have to start from the position of our own experiences before we can imagine others. It could even be argued that all human knowledge is inevitably anthropomorphic (in the way that the wind must be said 'to blow' because that is the closest humanly-understood analogy for what the wind does). Further, the strength of anthropomorphic depiction is that it gives insight into ourselves as humans as much as it does into the other being in question. Anthropocentrism is not the same thing as anthropomorphism and is potentially more dangerous, because it assumes that humans are of prime importance and that all nature should serve human wants. This attitude is no longer tenable, when the resultant damage to nature has become obvious.

The balance of the two attributes: Will to Stay in Being and Will to Create, summarise the third place of 'being', and also the motivations of husbandry. To love is to tend and care for, to celebrate and decorate, to be part of natural times and rhythms. To strive is to seek survival, progress, profit. Reproduction is a special case of achieving both of these goals at once, both staying in being and creating. Both existence and 'immortality' are achieved by 'producing fruit', but by definition this does not happen alone. The balanced ideal of husbandry is perfectly epitomised in the verb itself *colere* dwelling with, joining with, showing respect, tilling, and tending. The symbolic depiction of husbandry is the ancient marriage of earth and sun. Husbandry, the balance between love and strife, seems to me to be most like gardening; both management and decoration, and it requires a 'green-fingered' intuition. I suspect that Columella thought of husbandry as rather like gardening also: he concluded his prose treatise on farming with a tenth book on gardening, written as a poem. In this

goal of husbanding husbandry, language holds the bonds that are necessary. Husbandry, agriculture and poetry are interchangeable metaphors.

A science of husbandry could be shaped in keeping with the ideals of a 'singing *Agricultura*'. By 'singing', I mean, as explained in Chapter 6, a connected, harmonious practice, derived from nature herself. This could be envisioned as a two-way conversation of gestures between human and nature, or a pattern of 'call and response' (see Shibboleth). Much of the post-consumerist secular criticism levelled at 'science' is actually a response to wider symptoms of the modern vision. Modernism has been generally described as a state of division and fragmentation – Midgley refers to social atomism (atomism she sees as an over-simplistic model, 'parsimonious' perhaps, but not relevant). Serres comments on modern logic as a dichotomous 'either/or' mentality, which has persisted intellectually:

the dichotomy is there in people's heads. And in institutions, in the newspapers, in conventional exchanges – in mainstream intellectual movements' as the saying goes. Everywhere. Except in the inventive, active sciences and in old wives tales. Except at the extreme crest, narrow and rapid and in the slowest base.

(Serres and Latour 1995, p.159)

This notion of modern intellectual individualism, at its worst tallies with puritan, over-simplistic representations of good and bad, but is also behind the notion of modern ethics. Other fragmentations, which we continue to resolve, include the separation between the sciences and the humanities. The former developed a functional, analytical attitude towards language – in technical language there is no place for ambiguity. As we have seen, 'one word one meaning' is a naïve attitude. Technical jargon can be a stumbling block, since, as Michel Serres puts it: 'it prevents the majority from participating in the conversation, it eliminates rather than welcomes.' (Serres and Latour 1995, p.25).

Certainly, as a rejoinder to dichotomies, it might be offered that every definition invokes its opposite, much as Lucretius' assertion 'there are no centaurs' brings visions of centaurs galloping into the equation. Rather than a thesis of divisions, this work has been attempted as a contribution to wholes – the

separation between poetry and science is not as tight as we have been educated to believe. By looking at a past which is not out of date, and by visiting works where poetry and science and agriculture were not so separately delineated, it becomes clear the intellectual difficulties in seeing the world whole are not new, not especially modern, and not confined to any one discipline. Lucretius emphasised the *clinamen*, the basis of connections between atoms and thus the freedom of nature to create. Virgil represented himself though his poetry as the 'master joiner'. Both, no doubt were driven to write in order to redress a balance. Divisions and false dichotomies must be as old as rhetoric, as warfare, as marriage, as myths.

Troubles in agriculture are certainly as old as Columella, who wrote in the time of the Emperor Nero, when the pattern of land use and ownership changed from the traditional peasant economy. The landowners themselves were politically busy in urban areas and they tended to treat the slaves who worked on their estates poorly – they were ill-fed, were neither paid nor given incentives to work. Comparisons have been drawn between this period in Roman history and European capitalism, because of loss of traditional skills and the loss of medium or small scale farms, which are more socially connected to the land.

Again and again I hear leading men of our state condemning how the unfruitfulness of the soil, now the inclemency of the climate for some seasons past, as harmful to crops; and some I hear reconciling the aforesaid complaints, as if on well-founded reasoning, on the ground that, in their opinion, the soil was worn out and exhausted by the over-production of earlier days and can no longer furnish sustenance to mortals with its old-time benevolence. Such reasons, Publius Silvinus, I am convinced are far from the truth; for it is a sin to suppose that Nature, endowed with perennial fertility by the creator of the universe is affected with barrenness as though with some disease; and it is unbecoming to a man of good judgement to believe that the Earth whose lot was assigned a divine and everlasting youth, and who is called the common mother of all things...has grown old in mortal fashion. And furthermore, I do not believe that such misfortunes came upon us as a result of the fury of the elements, but rather because of our own fault; for the matter of husbandry, which all the best of our ancestors had treated with the best



of care, we have delivered over to the worse of our slaves, as if to a hangman for punishment.

(Columella 1960, p.3)

If productivity and profit are given priority, it tends to follow that traditional wisdom is lost and nature suffers. Columella's despair rings with a contemporary note – has the earth grown less fertile, is she old and mortally sick? To the extent that we have treated her as a resource to be exploited, it is our own fault.

'Science is another exercise of the imagination. It simply has to spend more time reconsidering itself and doing the measurements' (Wall 1997). Scientific developments begin in the imagination. The task of developing an ethical imagination is part of science, not a separate discipline. A science of nature is more like husbandry than an intellectual, ivory-tower exercise. When theories, practicalities and technologies are applied in life, the results are often indirect or unpredictable – that is 'the nature of things'. Therefore we have great difficulty in guaranteeing and defining 'good' husbandry as opposed to 'bad' husbandry – despite intentions, we cannot predict outcomes. Serres as a contemporary philosopher is heavily influenced by the same poetic intuition as Lucretius. Morality, he asserts, is like the weather – it operates outside human certainties, measurements or definitions, it is chaotic, yet self-patterning. Morality is necessary 'so that the Earth can continue, so that the air remains breathable, so that the sea remains the sea'. Humans are not detached from these mysteries. An 'intuitive mode of consciousness' or poetic sensibility can allow an experience of the wholeness of nature, where 'every part prefigures the whole and the whole remembers the parts' (Lehrs 1985). There must, from a holistic perspective, be a shared definition of being, that the third place between Will to Be and Will to Create.

What exactly is the Third Place? Ironically it is not a 'third' place in the additive sense, it exists between one and two – between complete division and complete unity, between heaven and hell, as Webster's Antonio would have said. Actually, Antonio, in melancholy humour, equates the third place with purgatory, as he, like the Protestants, denies its existence. But I have used the idea as a bridge, as place of negative capability. The best explanation is

perhaps from Shakespeare's early poem, printed in 1601, *The Phoenix and the Turtle* and the midsection of the poem (lines 33-48):

So between them love did shine  
That the Turtle saw his right  
Flaming in the Phoenix' sight;  
Either was the other's mine.

Property was thus appalled  
That the self was not the same:  
Single natures, double name,  
Neither two nor one was called.

Reason in itself confounded  
Saw division grow together;  
To themselves yet either neither,  
Simple were so well confounded,

That it cried 'How true a twain  
Seemeth this concordant one;  
Love hath reason, Reason none,  
If what parts can so remain.

(Shakespeare 2002, p.375,376)

To enter the third place takes a swerve into void, and what is created is a whole of distinct entities which cannot be divided into parts. Logical reasoning is confounded, the entities no longer exist entirely in themselves nor are they entirely fused. If this sort of third place is taken as a metaphor for husbandry and for the research 'process', the resultant relationship between human and nature, or self and other, is transformed and a third place is created in which both beings are 'distinctly' present (Burrow 2002, p:374). There is nothing sterile or objective about this creativity, neither is it a process to be defined, it is a mystery. It is a place and an act, a noun and a verb. The third place is a fresh way of seeing, a new way of knowing and a definition of life that allows for a live being to be alive – constantly renewed.

We cannot promote Lucretius' version of non-interventionist science, nor can we believe in Bacon's monological God, any more than we can believe literally in Virgil's numerous deities. Virgil's deities were not supernatural. Lucretius' Epicureanism reminds us of the value of detached contemplation, without fear of the future. Poetry reminds us of the value of negative capability, 'the power to fill other bodies', that intuitive ability to let the known and the unknown play together, so that connections form and dissipate freely. The environmental problems should be considered as a question – how to husband Gaia – not because we literally believe the metaphors of the earth as goddess, but because the earth is active, self-patterning, beautiful in itself and perhaps even ultimately 'good'. This goodness cannot solely be defined from the perspective of the human intellect. The verbs of husbandry are the same with which the earth husbands us. To return to the starting premise of this thesis, the most crucial verb is 'to be', which is an intimate dwelling with and dependence on the earth. This is the *boandi* of husbandry. The process of being is that balance between maintaining self-contained unity and creative joining. Certain qualities, such as having an animated 'spirit' and an autonomous 'soul' could be applied to everything that exists. A being can be envisioned as both a noun and a verb. Gaia is a noun which, because she personifies the earth, reminds us that the earth is active. We can use these ideas whilst paying heed to Lucretius' warning not to believe our metaphors too literally (2:652-660). These ideas call for openness towards poetic or symbolic language, an appreciation that reconciliation may be made between ancient belief systems and modern ideas.

It has been noticed historically that recalls to nature often run into difficulty, because they attempt to define what ultimately settles into a new, restrictive dogmatism (Bate 2000). This is why husbandry is constantly required – at least two sources of enlightenment, human and nature in collaboration. As explained in Chapter 6.2, the ancient myth of the wedding of sky and earth shows that both ways of knowing: scientific/analytical and poetic/intuitive are necessary, are intimately intertwined. If science is narrowly defined as the gathering of quantifiable certainties, then this thesis does not fall within that remit. If science is a rigorous seeking for knowledge which is both rational and respectful, one which works with language creatively, one which allows sensory engagement but is not an anthropocentric monologue, then I hope that this work is a contribution.

The Tables 7.1 and 7.2, provide a key to the controversial vocabularies – controversial in science that is, not so in poetry. Yet science and husbandry are both relationships with nature. In these collaborations nature needs to be depicted creatively, to be given voice so that her involvement is acknowledged. Nature is after all, to appropriate E. O. Wilson, the main provider of funds, the main ‘other who must be given credit’ (Wilson 1998). Our closest connectors, kin, and helpers are, both strangely and not strangely, the animals. This thesis has focused on science and the scientific method because this is appropriate to my academic context. However, the human-animal relationship is problematic not just in science but in sociological research generally (Irvine 2007). The issues relate to anthropocentrism, to human-oriented definitions of consciousness, self, and even human-centred definitions of culture. This is particularly the case where definitions prioritise human language. This debate is not a piece of abstract philosophical entertainment but rather informs and shapes knowledge and morality. As mentioned in Chapters 1-3, there are commentators who see patterns of discrimination (racism, sexism, homophobia), environmental degradation, and poverty all interlinked by ideologies of superiority and power. It has been pointed out that to incorporate animals in sociological scholarship (for example by redefining culture, self, consciousness to include them) would be both ‘transformative’ and ‘transforming’, as was the case when women’s knowledge and non-European knowledge was allowed into sociology (Irvine 2007). The same would surely be true for the sciences. Where we strive to know more of the natural world, we must keep in mind also the limits of human language.

### **7.3 The Attributes and Qualities of Nature**

At the outset of this research, (Chapter 3) a subject-subject approach was put forward, in an attempt to redress any inequalities of the observer-observed hierarchy. Crucially, ‘the Other’, whether a subject of research, an animal or nature as a whole, is not an inert subject of study. While the research has been justified in prose, the essential outcome events were the poems presented throughout this thesis. The poems were written from a perspective of ‘not knowing’, being open to allow connections to emerge on the basis of the personal experience and instinct. The use of poetry as a way of working granted certain freedoms that are not usual within conventional research

rhetoric. For example, I wanted to represent nature as active and as having certain qualities, such as goodness, in her own right. Just to probe this 'soft spot' further, what if the 'good' in husbandry came, not from strict definitions of right and wrong, but from nature? Authentically good husbandry could be part human-defined and part Nature-defined. If we allow this quality of goodness, into a scientific depiction of nature, what other qualities would be permitted? A good strategy to look for the qualities of nature, as intuited by humans throughout history, is to find the commonalities of religions, myths and vernacular wisdom.

Interestingly a twelfth century mystic Ramon Lull devised a system of science and art, based on the attributes of nature which he gathered from three religions: Islam, Christianity and Judaism. The full complement of attributes were: *Bonitas* goodness, *Magnitudo* greatness, *Eternitas* eternity, *Potestas* power, *Sapientia* wisdom, *Voluntas* will, *Virtus* virtue or strength, *Veritas* truth, *Gloria* glory (Yates 1979, p.13). The seventeenth-century philosopher, Spinoza, asserted that nature consists of an infinite number of attributes and he equated this 'substance' with God (Spinoza 1955).

Lull shared something of his motivation with Bacon: that to know nature was to know the Divine. Bacon and the developing modern science, however, focused mostly on the attributes of power and truth and the use that could be made from having accessed these qualities. Equating fruitfulness with profit, Bacon did not approve of poetry, he had no time for what he termed the 'barren virgins', Minerva and the Muses, (in this he was also playing political games, given that there was a lack of 'royal issue' from Queen Elizabeth I, in comparison with the fertile King James) (Bacon 1998, 2:1).

The other attributes of nature – goodness, eternity, strength, glory, virtue – are not given emphasis in the language of modern science, but Virgil and Lucretius would in different ways, subscribe to the fuller list. A twenty-first-century re-bonding of science with natural philosophy would give a breath of fresh air and perhaps new hope against the human destruction of nature.

Also squeezed from most modern science is the ancient idea of the four elemental qualities of earth, water, air and fire. Historically the elements were understood not as single-dimensional definitions but as symbolic language in

which to denote attributes and activities, relative energies and reactivity. A poetic understanding of the elements leads to an 'understanding of nature's own language', which is always available, no matter the historical time or culture in question (Lehrs 1985). Knowledge of nature and nature's language did not begin with Bacon's number, weight and measure, nor does science depend solely on the methods and assumptions of modernism. Interestingly, as we saw in the writings of Virgil and Lucretius, not only elements, but animals have been used to symbolise qualities. These notions of nature seem out of kilter with modern science which gives less recognition to the imaginative visions which may have originated the work. Finally as we have seen, sensory evidence is often outlawed from science, despite being the basis of qualitative recognition.

This thesis has been given a mandate to proceed by a set of boundary literatures on the nature of science (Lehrs 1985, Goodwin 1994b, Matthews 1991, Serres and Latour 1995, Skrbina 2005, Quincey 2002). At the conclusion of this thesis, suggestions are presented for a 'science of qualities' (Goodwin's term), which is also a 'science of relations' (Serres' term). However, more generally, these are suggestions for finding the third place between two sources of enlightenment. I have in mind, Serres' comment regarding 'enlightenment':

At least two sources of light are necessary; if not what is presented is simply a position, which rapidly becomes a directive that is imperialistic, necessary, obligatory.

(Serres and Latour 1995, p.178)

Therefore these conclusions are based firstly on a composite of Virgilian and Lucretian 'enlightenment'; secondly based on my experience of the conversations with contemporary husbanders and the poems. Thirdly and particularly in keeping with the husbandry theme – there is a third place to be found between the two sources of enlightenment which are personified by the Sky God and the Mother Earth, the mythological Adonis and Venus, and the archetypal male and the archetypal female. The gendered personification is an aid to thought and not to be taken in a literal dichotomous 'human-male versus human-female' sense.

The 'male' source of enlightenment is the analytical, rational, logical way of thinking. It is the basis of Francis Bacon's number weight and measure vision, it is associated with much of Western European knowledge, and with the progress and achievements of modernity. This enlightenment involves knowing 'about' a subject, from a detached viewpoint, rather than being viscerally involved. If this vision is taken to the extreme, however, it leads to a prioritisation of strife, on the basis of dissociation, emotional sterility, fear of the unknown, fear of love and an overwhelming anxiety that any one individual is inconsequential. The latter is symbolised for example in the Progeny sonnets where the Aberdeen-Angus sires are recorded as 'dead ends' in the herd books.

The 'female' source of enlightenment comes from involvement in natural cycles and rhythms, even being one who gives birth. Therefore there is a visceral engagement involved – a 'knowing from within', rather than an analytical 'knowing about'. The concept that 'nature is alive' is not strange within this vision, it is obvious. Taken to extreme, however, the archetypal Venus is a vision that is terrifyingly engaged. Everything becomes so imbued with meaning that the overall effect becomes overwhelming, an amorphous, yet incredibly detailed mass of activity, which can neither be contained nor comprehended by the human intellect. In *Hybrid*, I was expressing something of the fear of the irrational vision, by looking at one of my earliest nightmares. Even very young children experience these visions and anxieties.

As we saw in Chapter 6, Virgil depicted Venus as passion, the fire element, and the plague which both Virgil and Lucretius wrote about – those destructive natural forces that are beyond human control. For example, a plague, an outbreak of infectious disease, is a crucial event, not just in reality, but because it symbolises the clash between control and chaos. The bubonic plague outbreaks in seventeenth-century London undoubtedly are part of the history that shaped the seventeenth-century 'progress'. In this thesis, the plague in question was the 2001 foot and mouth crisis, which coincided with the death of my father (see Bertie and Birtie). This mention of personal circumstances brings me to the crucial fact that these poems and this thesis come either directly from or are subconsciously formed through personal experience. As one example, my insight into the two-fold definition of what it is 'to be', comes from being an identical twin and therefore knowing the importance of asserting individual worth and also of creating together (*Shibboleth*). For identical twins

there constantly exists a set of uncanny likenesses and differences nested within the likenesses. Twinhood, in creative writing, is a valuable representation of any close 'self and other' relationship (or even self and another version of self relationship) much in the way that in scientific research it is a valuable tool for understanding, for example, nature/nurture influences.

Nature teaches us through our own personal experience and there can be no shying away from this fact. I started this research project in 2002, in a situation of personal loss, I had I thought, not much to lose, and time to fill. *Revenge Tragedy* and *Quarry* were the first two poems in the sequence of events, *Garden*, written five years later, is the last. The clearing of such an empty space meant that I was free to notice events which shaped up around me. I collected symbols and waited to see what they would eventually mean. Five years later, the work has come to a place of redress. In *Garden* I am using the iconography of resurrection, the garden-story I have in mind is that of Mary Magdalene, and it is Easter morning. But I love the idea that these religious 'myths' encode natural truths and therefore versions of them exist in all world religions. Although the overt subject of the research was animal husbandry, and indeed, a specific subject was necessary to provide a 'homing place' for the work, ultimately, the findings are whole – they apply to many other things.

I have argued that nature is alive and active and has a whole range of other qualities. There are two main possible reactions to this statement, in fact, both reactions can occur in the same individual. The positive reaction comes from that part of us which is in tune with nature, particularly developed perhaps in anyone who works closely with animals or on the land and experiences natural cycles directly. In this context, even death is not to be feared as an alien experience, it is deeply connected to birth. This response is the 'heaven' aspect of husbandry, the great joy of being is that of being physically and spiritually connected to natural fluctuations.

I suggest that the 'hell' aspect of husbandry is that aspect of us which fears death, also the fear of losing control and ultimately the anxiety that the human (and particularly the male of the species) is not required. Here the idea that nature is alive may be a source of horror or despair. These two extreme responses relate to the very same place – heaven at one extreme, hell at the



other. And the two responses can be recognised in the same person, who hopefully manages to thread a third place, in reality, between them.

The research transformation, I have discovered, happens during the writing itself it is a harmony informed by more than one source of enlightenment. The third place of husbandry is to be found by the various ways in which humans 'know', analytically, intuitively and imaginatively. Nature is open to the manipulations of humans, not because she is a machine to be controlled but because she has that 'soft spot' which E.O. Wilson mentioned.

James Lovelock is famous for his Gaia hypothesis, whereby he used the name of a Greek goddess to depict the earth as a live self-regulating entity. He provides an example of the way in which a single word can be used as a 'one word poem' even within science – inducing great insight, simply by running with the metaphor (Lovelock 2006, p.10). In order to conceive of the earth as alive, Lovelock points out, we need to change our definition of 'to be alive':

it is time we enlarged our somewhat limited definition of life as something which reproduces and corrects the errors of reproduction by natural selection amongst the progeny.

To this extent, Lovelock is in agreement with the philosophy of panpsychism. He reminds us that definitions of life vary depending on the science discipline. He suggests a physicists' definition: 'something that exists within bounds, that spontaneously reduces its entropy (disorder)' (Lovelock 2006, p.163). This is, remarkably, in agreement with Lucretius.

In a holistic understanding of life, the attributes of life are prefigured in the parts and they are completed in the whole. If we widen our perspective to embrace 'the oneness of things', then 'life' becomes an attribute of nature, and as such, we can say that the earth is alive. By similar reasoning, if free-will is an attribute of nature then even atoms have something akin to free-will, because this is an inherent property of the whole. The conventional understanding of the terms 'life' and 'free-will' are analytical, human-orientated definitions. The holistic perspective gives a synthetic (and sympathetic) understanding of nature. The third place balance between Will to Stay in Being and Will to Create is a definition of existence in keeping with the physicists' creativity within bounds. A

holistic definition of existence is in keeping with husbandry, that is, the decorative, celebratory aspect of *colere*. The will of Gaia to survive is being experienced in climate and environmental changes as the earth makes adjustments to counter the excesses of human interference. Gaia also demonstrates a will to create, to engage with humans. Although Virgil was said to have given *Agricultura* the power of song, it was nature who taught Virgil to sing. We should not underestimate her.

What is good husbandry? I conclude that it cannot be defined by a moral code or a set of rules. Goodness is not a uniquely human attribute. It does not depend solely on humans and the good which exists is not only for humans. We need to practise a non-anthropocentric perspective in our endeavours. The earth does not belong to us, it is not our resource. We act on the basis of kinship with animals, and on the basis of kinship with all things. We do have a duty to husband the earth, not because we are in charge nor even just because she is our home. As Lovelock reminds us, we need an ethical system in which the natural world has value for and in itself. The universe is something internal as well as external, we can both ask and live the questions as we go along. However, Lovelock writes in despair over our 'breathtaking insolence' in depleting the Earth's store of carbon. He suggests that talk of sustainable development and renewable energy are feeble offerings. He advocates what many would see as drastic solutions – the development of nuclear power and consumption of chemically synthesised food; the use of technology for 'virtual' entertainment and travel; severe reduction in population numbers. His closing suggestion, however, is not a technological way forward, but rather that we need to write a book for any survivors of the forthcoming climate catastrophe – a survival manual for our successors. It needs to be both practical, philosophical, both art and science. I suggest that language and that nature would willingly collaborate in such a book, as they did for Virgil and Lucretius, and that it would be a continuation of the georgic tradition. The attributes of nature should be written into the text. In terms of ethics, the conclusion of this thesis is not new. The greatest attribute is 'kind-ness', that will to belong, which, as the ancients knew as the *clinamen* and as love.

An early inspiration for this thesis was the noctuid moth, a species whose hearing ability was the subject of research. Yet the moth itself was almost entirely missing from the work. Within the rhetoric and conventions of the

scientific method humans could neither hear, nor grant voice, to the moth. Any question of doing so would be dismissed as romantic, emotive fiction and not within the remit of science. I took the moth to be a symbol of the missing voice of the animal kingdom. To incorporate acknowledgment of the qualities of nature would prove transforming to science. The rewards would be indirect, but would surely husband wholes.



## APPENDIX 1

### Extracts from Lucretius' *de rerum natura*

The following extracts are presented in the order of appearance in the thesis. My versions are given initially, followed by the original Latin, then one other translation.

#### Chapter 1.4

If he would steer his life in truth,  
then wealth showers those who show forbearance,  
an even spirit. In such a calm crossing, nothing is lost.

5:1115-1117

*Quod si quis vera vitam ratione gubernet,  
divitiae grandes homini sunt vivere parce  
aequo animo; neque enim est umquam penuria parvi.*

5.1115-1117 (Lucretius 1925, p.464)

But if a man should guide his life by wisdom,  
His greatest riches are a frugal life  
And quiet mind. In that little there's no poverty.

(Melville 1997, p.168)

## Chapter 2.1

All sorts of creatures must have become extinct  
 in the meantime, not able to mate or to give birth.  
 All those you see grazing contentedly in today's light  
 have been defended since the start by their own natures;  
 whether cunning or brave or ultimately agile.  
 Many others proved noble and useful  
 and commended themselves to our protection,  
 traditionally under human keeping.  
 Lions, meantime, have been ferociously saved by courage,  
 the fox by his cunning and the stag by his fleeting escapes.  
 The lightly-sleeping, faithful hearted dog,  
 all types of draught animals,  
 wool-bearing sheep and horned cattle,  
 again fall under our guardianship, Memmius.  
 They eagerly traded the wild for peace,  
 following where there was a secure home,  
 and lots of fodder in exchange for work,  
 timidly pleading their small usefulness.

5:855-870

*multaque tum interiisse animantum saecula necessest  
 nec potuisse propagando procudere prolem.  
 nam quaecumque vides vesci vitalibus auris,  
 aut dolus aut virtus aut denique mobilitas est  
 ex ineunte aevo genus id tutata reservans.  
 multaque sunt, nobis ex utilitate sua quae  
 commendata manent, tutelae tradita nostrae.  
 principio genus acre leonum saeva saecula  
 tutata virtus, volpis dolus et fuga cervos.  
 at levisomna canum fido cum pectore corda,  
 et genus omne quod est veterino semine partum,  
 lanigeraeque simul pecudes et bucera saecula,  
 omnia sunt hominum tutelae tradita, Memmi.*

*nam cupide fugere feras pacemque secuta  
sunt et larga suo sine pabula parta labore,  
quae damus utilitatis eorum praemia causa.*

5:855-870 (Lucretius 1925, p.446)

In those days many breeds of animals  
Must have died out, unable by procreation  
To hammer out a chain of progeny.  
All that you see drawing the breath of life  
Either by guile or courage or by speed  
From the beginning of time have been preserved  
And there are many which their usefulness  
Has commended to us, entrusted to our protection.  
Courage has kept the savage lions safe,  
Cunning the fox and speed the fleeing stag.  
The dog, our faithful watchman of the night,  
And beasts of burden of all kinds, and sheep  
With woolly fleeces also, and horned cattle  
All these have man's protection Memmius.  
Gladly they fled the beasts of prey and sought  
Peace and good victuals without labour won  
Which we supply them in reward for service.

(Melville 1997, p.161)

### Chapter 3.3

In truth, the earth was never sentient.  
It is only able to bring forth so many things  
into the light of day, because of the many atoms.  
So, if anyone wants to call the sea Neptune,  
to say that corn is from Ceres, to take advantage  
of wine from Baccus, let them, we can even  
let it pass if he invokes the earth  
as the Mother of the Gods, as long as his mind  
is not tainted with the bonds of religion.

2:652-660

*Terra quidem vero caret omni tempore sensu,  
Et quia multarum potitur primordia rerum,  
multa modis multis effert in lumina solis.  
Hic si quis mare Neptunum Cereremque vocare  
constituet fruges et Bacchi nomine abuti  
mavolt quam laticis proprium proferre vocamen,  
concedamus ut hic terrarum dictitet orbem  
esse deum Matrem, dum vera re tamen ipse  
religione animum turpi contingere parcat.*

2:652-660 (Lucretius 1925, p.147)

Indeed the earth is now and always  
Has been devoid entirely of any kind of feeling.  
The reason why it brings forth many things  
In many ways into the light of sun  
Is that it holds a multitude of atoms.  
If anyone decides to call the sea Neptune,  
And corn Ceres and misuse the name of Bacchus  
Rather than give grape juice its proper title,  
Let us agree that he can call the earth



Mother of the Gods, on this condition –  
That he refuses to pollute his mind  
With the foul poison of religion.

(Melville 1997, p.54)

## Chapter 4.4

How lovely it is, to watch the turmoil of the wind  
and sea, all great troubles and labours,  
from another place. Not that you would smile  
at anyone's distress, for you can hold no spite,  
discerning only sweetness. It is also good to scan  
the field of action, confident that you are  
well-equipped for any contest –  
the wisdom of your teachers proves to build  
your strong defence, your safe haven.  
You can look from there and all you see below  
are paths of broken fragments, little ravings –  
public lives contesting greatness, ingenuity.  
The light of day exposes all the harm that battle  
causes and the one who holds the highest rank  
begins by seeking hidden power in things.  
O miserable intellects, O broken hearts!  
what shadowy trials eat away your life-spans.  
Do you not see how nature herself howls  
for nothing less than her body to be free  
of pain so that her mind can delight  
in fruitfulness, rather than anxiety.

2: 1-19

*Suave, mari magno turbantibus aequora ventis,  
e terra magnum alterius spectare laborem;  
non quia vexari quemquamst iucunda voluptas,  
sed quibus ipse malis careas quia cernere suave est.  
Suave etiam belli certamina magna tueri  
per campos instructa tua sine parte periculi.  
Sed nil dulcius est bene quam munita tenere  
edita doctrina sapientum tempe serena,  
despicere unde queas alios passimque videre  
errare atque viam palantis quaerere vitae,*

*certare ingenio, contendere nobilitate,  
noctes atque dies niti praestante labore  
ad summas emergere opes rerumque potiri.  
O miseras hominum mentes, o pectoral caecca!  
qualibus in tenebris vitiae quantisque periclis  
degitur hoc aevi quodcumquest! None videre  
nil aliud sibi naturam latrare, nisi utqui  
corpore seiunctus dolor absit, mensque fruatur  
iucundo sensu cura semota metuque?*

2:1-19 (Lucretius 1925, p.95)

A joy it is when the strong winds of storm  
Stir up the waters of a mighty sea.  
To watch from shore the troubles of another.  
No pleasure this in any man's distress  
But joy to see the ills from which you are spared  
And joy to see great armies locked in conflict  
Across the plains, yourself free from the danger.  
But nothing sweeter is than this; to dwell  
In quiet halls and lofty sanctuaries  
Well fortified by the doctrines of the wise,  
And look thence down on others wandering  
And seeking all astray the path of life –  
The clash of intellects, the fight for honours,  
The lust for wealth, the efforts night and day  
With toil and sweat to scale the heights of power.  
O wretched minds of men! O hearts so blind!  
How dark the life, how great the perils are  
In which whatever time is given is passed.  
Do you not see that Nature cries for this,  
And only this, that pain from out the body  
Shall be removed away, and mind enjoy  
Sweet sense of pleasure, freed from care and fear.

(Melville 1997, p.36)

## Chapter 5.1

Oh, in such persistent absence, how you pierced  
that vivid first-light, I am inclined to follow  
your kind paths, will plant my feet, carry your mark;  
longing to sing, close and certain – I will mimic  
you, though I, a swallow; you, a swan.

3: 1-7

*O tenebris tantis tam clarum extollere lumen  
qui primus potuisti inlustrans commoda vitae,  
te sequor, o Graiae gentis decus, inque tius nunc  
ficta pedum pono pressis vestigia signis,  
non ita certandi cupidus quam propter amorem  
quod te imitari aveo: quid enim contendat hirundo  
cycnis...*

3:1-7 (Lucretius 1925, p.189)

You who from so great darkness could uplift  
So clear a light, lighting the joys of life,  
You glory of the Greeks, I follow you  
And in your footsteps plant my footsteps firm,  
Not in desire of rivalry, but love  
Drives me to yearn to copy you: the swallow  
Can't vie with swans.

(Melville 1997, p.70)

## Chapter 5.2

In that very place, where recent showers  
 plunged headlong to marry earth,  
 the nurturing green rises, tree-twigs brighten,  
 they bear increasing fruit. So, the races  
 of humans and beasts are furthered;  
 so, we see cities flowering, starry-eyed with children;  
 so foliage and birds greedily erupt in the forest.  
 Cattle, made fat on joyful pasture, collapse,  
 dropping fairest milk and everywhere the young  
 are possessed with it and stagger, madly happy.  
 So the essence of the visible does not perish altogether  
 when nature restores things, from one place to another,  
 nor does she give Birth without Death,  
 her hand-in-hand accomplice.

1:250-264

*Postremo pereunt imbres, ubi eos pater aether  
 in gremium matris terrae praecipitavit;  
 et nitidae surgunt fruges, ramique virescunt  
 arboribus, crescunt ipsae fetuque gravantur.  
 hinc alitur porro nostrum genus atque ferarum,  
 hinc laetas urbes pueris florere videmus  
 frondiferasque novis avibus canere undique silvas,  
 hinc fessae pecudes pingui per pabula laeta  
 corpora deponunt et candens lacteus umor  
 uberibus manat distentis, hinc nova proles  
 artubus infirmis teneras lasciva per herbas  
 laudit lacte mero mentes perculsa novellas.*

1:250-264 (Lucretius 1925, p.23)

Lastly showers perish when father ether  
Has cast them into the lap of mother earth.  
But bright crops rise, and branches in the trees  
Grow green, trees grow and ripe fruit burdens them.  
Hence food comes for our kind and for wild beasts,  
Hence we see happy cities flower with children,  
And leafy woods all singing with young birds,  
Hence cattle wearied by their swollen weight  
Lie down across rich pastures, and the white milky stream  
Flows from their udders. Hence the young progeny  
Frisk with weak limbs on the soft grass, their youthful minds  
Intoxicated by the strong, fresh milk.

(Melville 1997, p.10)

Venus, Creatress of all and of Aeneas,  
whose response unfurls our days,  
who soothes with milk,  
it is you alone in heaven who stalls the constellations  
to concede fruitfulness to sea and earth;  
through your shelter, all living things  
rise and repeatedly gaze on the sun.  
For you, goddess, winds flee,  
clouds rise at your coming,  
the skilful earth bursts into sweet blossom,  
the sea laughs calm crossings,  
the heavens dimple their lightness.

1: 1-9

*Aeneadum genetrix, hominum divomque voluptas,  
alma Venus, caeli subter labentia signa  
quae mare navigerum, quae terras frugiferentis  
concelebras, per te quoniam genus omne animantum  
concipitur visitque exortum lumina solis:  
te, dea, te fugiunt venti, te nubile caecli  
adventumque tuum, tibi suavis daedala tellus  
summittit flores, tibi rident aequora ponti  
placatumque nitet diffuse lumine caelum.*

1: 1-9 (Lucretius 1925, p.2)

O mother of the Roman race, delight  
Of men and gods, Venus, most bountiful,  
You who beneath the gliding signs of heaven  
Fill with yourself the sea, bedecked with ships  
And earth, great crop-bearer, since by your power  
Creatures of every kind are brought to birth  
And rising up behold the light of sun;  
From you, sweet goddess, you, and at your coming  
The winds and clouds of heaven flee all away;  
For you the earth well skilled puts forth sweet flowers  
For you the seas' horizons smile and sky,  
All peaceful now, shines clear with light outpoured.

(Melville 1997, p.3)



### Chapter 5.3

How nature, on the crest of her wave-work  
from first-beginnings, entrusts  
and by the same token, collapses, all that ever was –  
nature-killer, the day after tomorrow.

1:54-57

*et rerum primordia pandam,  
unde omnis natura creet res auctet alatque  
quove eadem rursum natura perempta resolvat,*

1:54-57 (Lucretius 1925, p.7)

The primal elements of things from which  
Nature creates, increases, nourishes  
All things that are, and into which again  
Nature dissolves them when their time has come.

(Melville 1997, p.4)

And another thing on which I want to shed light,  
to answer, from the unknown void,  
is that, solitary bodies, raining under their own weight,  
wept of specifics, are able for some reason, untamed, to swerve  
from the usual hapless echo.

2:216-210

*Illud in his quoque te rebus cognoscere avemus  
corpora cum deorsum rectum per inane feruntur  
ponderibus propriis, incerto tempore ferme  
incertisque locis spatio depellere paulum,  
tantum quod momen mutatum dicere possis.*

2:216-210 (Lucretius 1925, p.113)

Now here is another thing I want you to understand.  
While atoms move by their own weight straight down  
Through the empty void, at quite uncertain times  
And uncertain places they swerve slightly from their course.  
You might call it no more than a mere change of motion.

(Melville 1997, p.42)

It costs then, a host of impalpable particles  
stirring before we are shaken to attention;  
soul-seeds cascading waken our joints –  
bodies charging, chiming, sparking apart –  
intricate, reciprocal, integrated.

3:391-395

*Usque adeo prius est in nobis multa ciendum  
quam primordia sentiscant concussa animai  
semina corporibus nostris inmixta per artus,  
et tantus intervallis tuditantia possint  
concursare coire et dissultare vicissim.*

3:391-395 (Lucretius 1925, p.217)

So fine is it that many particles  
Must be moved in us before, spread through our limbs,  
The first beginnings of spirit can be touched  
And feel and bouncing across those intervals  
Combine and couple and spring apart in turn.

(Melville 1997, p.80)

In the same way in fact the vast hordes of atoms  
cram and burst to make this and that,  
to squeeze together to take their positions,  
they greet and consort and part to create  
*the sky the sea the earth the sun*  
all things flow from these constituents.  
Even the fruitful trees, and all living creatures  
are truly only moving atoms.  
Why not? Look at these verses turned  
from only letters dispensed in sound  
how they jostle and shuggle to spill  
their meaning, even when drawn apart  
they resonate, they give and receive,  
though singly set in rows.  
How much more the primordial elements  
are variously able to make all that is.

1:817-829

*atque eadem magni refert primordial saepe  
cum quibus et quali positura contineantur  
et quos inter se dent motus accipiantque;  
namque eadem caelum mare terras flumina solem  
constituent, eadem fruges arbusta animantis,  
verum aliis alioque modo commixta moventur.  
quin etiam passim nostris in versibus ibsis  
multa elementa vides multis communia verbis,  
cum tamen inter se versus ac verba necessest  
confiteare et re et sonitu distare sonanti.  
tantum elementa queunt permutato ordine solo;  
et rerum sunt primordia, plura adhibere  
possunt unde queant variae res quaeque creari.*

1: 817-829 (Lucretius 1925, p.68)

For these same atoms form sky, sea, land, rivers, sun,  
The same compose crops, trees, and animals,  
And have different motions, different combinations.  
Why in my verses you see  
Are many letters common to many words,  
But yet you must admit that words and lines  
Differ in meaning and the sounds they make.  
Such power have letters through mere change of order;  
But atoms can bring more factors into play,  
To create all things in their variety.

(Melville 1997, p.26)

A jagged voice is evoked from jagged atoms  
whilst smooth ones make smoothness.

4:551-552

*asperitas autem vocis fit ab asperitate  
principiorum, et item levor levore creatur.*

4:551-552 (Lucretius 1925, p.318)

The roughness of voice moreover comes  
From the roughness of atoms and smoothness from smooth.

(Melville 1997, p.116)

And we must agree that milk and honey  
roll on the tongue to taste delicious  
in contrast harsh centaury and wormwood  
hurl themselves to set the teeth on edge

2:398-401

*Huc accedit uti mellis lactisque liquors  
iucundo sense linguae tractentur in ore;  
at contra taetra absinthi natura ferique  
centauri foedo pertorquent ora sapore;*

2:398-401 (Lucretius 1925, p.126)

And here's another thing. Honey and milk  
Rolled in the mouth have a delightful taste;  
But bitter wormwood and harsh centaury  
Quite screw up the face with their loathsome flavour.

(Melville 1997, p.47)

## Chapter 5.4

Great Molossian dogs, slobbery mouthed at first  
jerk to a growl when roused, all bared teeth  
yet a sound different when their jealous yapping fills the room  
or when they fondle their own young whelps with licks  
pretending to nibble and scoop and gobble them up;  
another tone, the pitiful whimpering when about to be left  
or that yelp when they dodge a gash from the whip.

5: 1063-1072

*Inritata canum cum primum magna Molossum  
mollia ricta fremunt duros nudantia dentes,  
longe alio sonitu rabie restricta minantur,  
et cum iam latrant et vocibus omnia complent.  
at catulos blande cum lingua lambere temptant  
aut ubi eos iactant pedibus morsuque petentes  
suspensis teneros imitantur dentibus haustus,  
longe alio pacto gannitu vocis adulant,  
et cum deserti baubantur in aedibus aut cum  
plorantes fugiunt summisso corpore plagas.*

5: 1063-1072 (Lucretius 1925, p.460)

Angry Molossian hounds, when first they draw back  
Their flabby jowls and bare their teeth and growl  
With rage suppressed, make sounds quite different  
From when they bark and fill the place with din.  
And when they lick their pups with loving tongue  
And toss them with their paws and nibbling them  
Pretend to make sweet tender mouthfuls of them,  
Far different then the playful yelps they make



From when they howl abandoned in the house  
Or whimper cringing from the master's whip.

(Melville 1997, p.167)

do you not see how nature herself howls  
for nothing less than her body to be free  
of pain so that her mind can delight  
in fruitfulness, rather than anxiety.

2:17-19

*...none videre  
nil aliud sibi naturam latrare, nisi utqui  
corpore seiunctus dolor absit, mensque fruatur  
iucundo sensu cura semota metuque?*

2:17-19 (Lucretius 1925, p.95)

Do you not see that Nature cries for this,  
And only this, that pain from out the body  
Shall be removed away , and mind enjoy  
Sweet sense of pleasure, freed from care and fear.

(Melville 1997, p.36)

those pursuits to which we devote ourselves  
things that we would seize with our minds,  
would drink our fill from, if we could,  
return to taunt us, more often than not, in our dreams.

4:962-965

*Et quo quisque fere studio devinctus adhaeret,  
aut quibus in rebus multum sumus ante morati,  
atque in ea ratione fuit contenta magnis mens,  
in somnis eadem plerumque videmur obire:*

4:962-965 (Lucretius 1925, p.351)

And those pursuits which we most love to follow,  
The things in which we have just now been engaged,  
The mind being thus the more intent upon them,  
These are the most oft the substance of our dreams.

(Melville 1997, p.127)

the bereaved mother trails through the forest,  
her cloven footfalls heavy, low to the ground,  
she constantly revisits where her child was last seen  
filling the empty glades with plaintive sounds  
and returns to the byre completely exhausted  
still without her little one.

2:355- 360

*at mater viridis saltus orbata peragrans  
quaerit humi pedibus vestiga pressa bisulcis,  
omnia convisens oculis loca si queat usquam  
conspicere amissum fetum, completque querellis  
frondiferum nemus adsistens et crebra revisit  
ad stabulum desiderio perfxa iuveni;*

2:355- 360 (Lucretius 1925, p.122)

The mother wandering through the leafy glens  
Bereaved seeks on the ground, the cloven footprints.  
With questing eyes she seeks if anywhere  
Her lost child may be seen; she stands and fills with moaning  
The woodland glades, she comes back to the byre,  
Time and time again yearning for her calf.

(Melville 1997, p.46)

As if they could possibly have expected different –  
even those animals that seemed tame at home, reverted  
to the wild, boiled over in the heat of the uproar,  
went berserk right back to their various roots,  
even as now elephants sometimes turn on their keepers  
and gouge them to death, bringing shame and disgrace.

5:1334-1340

*siquos ante domi domitos satis esse putabant,  
effervescere cernebant in rebus agundis  
volneribus clamore fugaterrore tumultu,  
nec poterant ullam partem redducere eorum;  
diffugiebat enim varium genus onme ferarum,  
ut nunc saepe boves lucae ferro male mactae  
diffugiunt, fera facta suis cum multa dedere.*

5:1334-1340 (Lucretius 1925, p.482)

Even the animals that seemed tame at home  
They saw boil over in the heat of action –  
Wounds, shouting, terror and tumult –  
And none of them would answer the recall.  
For all the different wild beasts fled away,  
As elephants often at the present time  
Will run amok when wounded by the steel,  
After they have turned their fury on their keepers.

(Melville 1997, p.174)

in the final reckoning, each and every thing  
is intimately marked and set within  
its own deep boundaries

5: 90

*...finita potestas denique cuique  
quanam sit ratione atque alte terminus haerens.*

5: 90 (Lucretius 1925, p.384)

...in a word how everything  
Has finite power and deep-set boundary stone.

(Melville 1997, p.139)

but things unfold correctly, each bound to be  
self-contained within nature.

5.923,4

*Sed res quaeque suo ritu procedit, et omnes  
foedere naturae certo discrimina servant.*

5.923,4 (Lucretius 1925, p.450)

But each proceeds on its appointed way  
And by fixed laws of nature stays distinct.

(Melville 1997, p.163)

## APPENDIX 2

### Extracts from Virgil's *Georgics*

The following extracts are presented in the order of appearance in the thesis. My versions are given initially, followed by the original Latin, then one other translation.

#### Chapter 1.3

What makes joyful fields? Under which stars to turn  
the earth, Maecenas, how to marry elms and vines,  
what are the worries with cattle, how to harness  
a cultivated herd, what trials make bees thrive?  
From here I'll start to sing.

1:1-5

*Quid faciat laetas segetes, quo sidere terram  
vertere, Maecenas, ulmisque adiungere vitis  
conveniat, quae cura boum, qui cultis habendo  
sit pecori, apibus quanta experientia parcis,  
hinc canere incipiam.*

1:1-5 (Virgilius 1988, p.1:37)

What makes the corn crops glad, under which star  
To turn the soil, Maecenas, and wed your vines  
To elms, the care of cattle, keeping of flocks,  
All the experience thrifty bees demand –  
Such are the themes of my song.

(Wilkinson 1982, p.57)



### Chapter 3.4

Firstly a variety of trees spread themselves  
 naturally without man's planning at all.  
 Of their own free will, they incline to the plains  
 their tender saplings infiltrate  
 the curve of the stream: the pliant spindle-tree,  
 noble poplars, and grey-green fronded willows.  
 Others also rise from scattered seed, that fathers  
 the great woodland chestnut and Jupiter's oak  
 and the oaks from which the Greeks read auguries.  
 Some sprout densely along their roots:  
 the cherry and the elm, whilst the laurel offspring  
 take shelter under their mother's vast shadow.  
 So Nature hosts her own possession  
 thriving and fruitful, haunting the forests.  
 There are other methods which man has learnt from experience:  
 he has torn saplings from the mother's body  
 to bury them in trenches, or he has buried bits of stem  
 in the field, staked, after sharpening  
 or scoring the ends in the shape of a cross.

2: 9-25

*Principio arboribus varia est natura creandis.*  
*namque aliae nullis hominum cogentibus ipsae*  
*sponte sua veniunt camposque et flumina late*  
*curva tenent, ut molle siler lentaeque genestae,*  
*populus et glauca canentia fronde salicta;*  
*pars autem posito surgunt de semine, ut altae*  
*castaneae nemorumque Iovi quae maxima frondet*  
*aesculus atque habitae Graeis oracula quercus.*  
*Pullulat ab radice aliis densissima silva,*  
*ut cerasis ulmisque; etiam Parnasia laurus*

*parva sub ingenti matris se subicit umbra.  
Hos natura modos primum dedit, his genus omne  
silvarum fruticumque viret nemorumque sacrorum.  
Sunt aliae, quas ipse via sibi repperit usus.  
Hic plantas tenero abscindens de corpore matrum  
deposuit sulcis, hic stirpes obruit arvo  
quadrifidasque sudes et acuto robore vallos;*

2: 9-25 (Virgilius 1988, p.1:52)

First, trees know various ways of propagation.  
Some grow of their own accord with no control  
Of human hand: across the plains, along  
The winding river banks they hold their sway,  
The yielding osier and the pliant broom,  
The poplar and the willow, silvery-leaved.  
Some spring from fallen seed, the lofty chestnut,  
The oaks whose foliage dominates the groves  
Of Jove and those the Greeks deemed oracles.  
In some, thick undergrowth sprouts from the root,  
Cherries and elms; Apollo's Delphic bay-shoot,  
Tiny beneath its mother's massive shelter,  
Crops up. These methods nature first provided  
For trees and shrubs and sacred groves to flourish.  
In others, man's experience as he goes  
Has found a way; one tearing suckers from  
The mother's tender body buried them  
In furrows; another planted in the ground  
Pieces of stem split crossways at the end  
Of sharpened stakes.

(Wilkinson 1982, p.77).

After the birth, all tending shifts, to the calves.  
Immediately, they are to be marked,  
branded with their stock-names –  
those of wayward character to be reined in;  
those set apart for sacrifice to save us;  
those that will cleave the plains to clods of earth;  
to the rest are given pasture and herbs.  
For the long haul of field work ahead,  
the young are to be shaped from their raw state,  
tamed and encouraged, their spirits composed,  
all when they are tender, pliable and quick-witted.  
First hold their necks loosely bound in thin osier hoops,  
thus from freedom they slip into service.  
Tighten so they submit to the yoke  
and get their heads round taking gradual steps  
from there let them frequently draw empty wheels  
that hardly mark any trace into the dust.  
Later, powerful and sleek fastened to the beam  
of a creaking beech-wood wagon,  
side by side, they will haul brass wheels.  
Meanwhile, before they are docile adults,  
let them enjoy lots of grass, hand-picked willow leaves,  
reeds from the marsh, even corn,  
and don't as our foolish fathers did,  
exhaust the snow-white milk  
to overflowing pails, but let the calves  
suckle sweetness as nature intends.

3:157-178.

*Post partum cura in uitulos traducitur omnis;  
Continuoque notas et nomina gentis inurunt,  
Et quos aut pecori malint summittere habendo  
Aut aris seruare sacros aut scindere terram  
et campum horrentem fractis inuertere glaebis.*

*Cetera pascuntur uiridis armenta per herbas:  
 tu quos ad stadium atque usum formabis agrestem  
 iam uitulos hortare uiamque insiste domandi,  
 dum faciles animi iuuenum, dum mobilis aetas.  
 Ac primum laxos tenui de uimine circlos  
 ceruici subnecte; dehinc, ubi libera colla  
 seruitio adsuerint, ipsis e torquibus aptos  
 iunge pares, et coge gradum conferre iuencos;  
 atque illis iam saepe rotae ducantur inanes  
 per terram, et summo usetigia puluere signent;  
 post ualido nitens sub pondere faginus axis  
 instrepat, et iunctos temo trahat aereus orbis.  
 Interea pubi indomitae non gramina tantum  
 nec uescas salicum fronds uluamque palustrem,  
 sed frumenta manu carpes sata; nec tibi fetae  
 more patrum niuea implebunt mulctraria uaccae,  
 sed tota in dulcis consument ubera natos.*

3:157-178 (Virgilius 1988, p.2:7)

After their birth the calves in turn receive  
 All the attention. Straight away the herdsman  
 Must brand them with the markings of their stock,  
 Distinguishing those set aside for breeding,  
 Those kept for sacrifice, and those reserved  
 For breaking clods and cleaving shaggy ploughland.  
 The rest are sent to pasture in the meadows.  
 Those you will educate for farm employment  
 On special duties you must first encourage  
 In calfhood, and begin their discipline  
 While still their spirits are at the docile age.  
 First tie round their necks thin osier-nooses;  
 Then, when the freeborn necks are now accustomed  
 To servitude, still using those same nooses,  
 Link pairs of bullocks and make them march together.  
 Now let them often draw across the land

Unloaded wheels that barely print the dust;  
Later a beechwood axle heavily laden  
May strain and creak, the wheels behind the bullocks  
Hitched to a brassbound pole. While they are young  
And still unbroken you will gather for them  
Not only grass but little willow leaves  
And marshy sedge, but tender hand-picked corn.  
Nor will your cows as in our fathers' day,  
When newly calves fill pails with snowy milk,  
But save their udders for their cherished offspring.

(Wilkinson 1982, p.104)

## Chapter 6.1

Lucky is the one who has mastered the causes of things  
who no longer fears the relentlessness of what may happen,  
who grinds underfoot the turmoil of Acheron's desires;  
but fortunate too is the one acquainted with rural gods,  
Pan and old Silvanus and the sister Nymphs.

4:490-494

*felix qui potuit rerum cognoscere causas:  
atque metus omnis et inexorabile fatum  
subiecit pedibus strepitumque Acheronis auari.  
fortunatus et ille deos qui nouit agrestis:  
Panaque Siluanumque senem Nymphasque sorores.*

4:490 494 (Virgilius 1988, p.2:66)

Blessed is he whose mind had power to probe  
The causes of things and trample underfoot  
All terrors and inexorable fate  
And the clamour of devouring Acheron;  
But happy too is he who knows the gods  
Of the countryside, knows Pan and old Silvanus  
And the sister Nymphs.

(Wilkinson 1982, p.93)

I too must endure, must become the voice  
that overcomes the earth, that passes the lips of others.

3:8-9

*Qua me quoque possim  
tollere humo uictorque uirum uolitare per ora.*

3:8-9 (Virgilius 1988, p.2:3)

I must find a way  
Of my own to soar above the common ground  
And to 'fly victorious on the lips of men' .

(Wilkinson 1982, p.99)

Nod to my adventure, compose from the outset, my bold path  
the rough, rural way – step forward, be my advocate.

1:40-42

*da facilem cursum atque audacibus adnue coeptis,  
ignarosque uiae mecum miseratus agrestis  
ingredere et uotis iam nunc adsuesce uocari.*

1: 40-2 (Virgilius 1988, p.1:38)

But smooth my path, smile on my enterprise,  
Pity with me the unguided steps of farmers,  
Come forward, and learn already to answer prayer.

(Wilkinson 1982, p.58)



To that end, you who in the near, uncertain future  
may join the glorious band of gods, Caesar,  
or, if you wish, may visit cities, attend to lands,  
become, as the whole earth turns, the one  
who reproduces fruit, who governs even seasons,  
who grasps from Venus her garland of myrtle;  
you may rise, a sea-god to still tempests, uniting sailors.

1:24-30

*Toque adeo, quem mox quae sint habitura decorum  
concilia incertum est, urbisne inuisere, Caesar,  
terrarumque uelis curam, et te maximus orbis  
auctorem frugum tempestatumque potentem  
accipiat cingens materna tempora myrto;  
an deus immensi uenias maris ac tua nautae  
numina sola colant,*

1:24-30 (Virgilius 1988, p.1:37)

And you above all, you of the unknown future –  
Whether some council of the gods will soon  
Receive you, Caesar, or whether you may choose  
To visit cities, succour lands, and be  
Acknowledged over this wide world (your brow  
Bound with a wreath ancestral, Venus' myrtle)  
Author of fruits and potentate of seasons;  
Or whether as deity of the boundless sea  
You come and sailors recognise alone  
Your godhead

(Wilkinson 1982, p.58)

## Chapter 6.2

The father himself has come to conclude  
that the way to cultivate is rarely easy

1: 121-46

*Pater ipse colendi  
Haud facilem esse uiam uoluit*

1: 121-46 (Virgilius 1988, p.1:40)

The father himself  
Willed that the path of tillage be not smooth.

(Wilkinson 1982, p.60)

You: bright, generous  
Lights, engraving the sky, you charm the year home

1:5,6

*O clarissima mundi  
lumina, labentum caelo quae ducitis annum*

1:5,6 (Virgilius 1988, p.1:37)

You brightest lamps  
That lead the year's procession across the sky.

(Wilkinson 1982, 57)

It's not for nothing that we scrutinize the rising  
of the constellations obedient to the four-spliced year

1;257-8

*Nec frustra signorum obitus speculamur et ortus,  
temporibusque parem diversis quattuor annum.*

1:257,8 (Virgilius 1988, p.1:44)

For not in vain we watch the constellations,  
Their risings and settings, not in vain  
The fourfold seasons of the balanced year

(Wilkinson 1982, p.65)

If in truth, the sun habitually scorches past  
and the moon in sequence returns its gaze  
then rest assured, the nightfall cannot seize tomorrow.

1: 424-6

*Si vero solem ad rapidum lunasque sequentis  
ordine respicies, numquam te crastina fallit  
hora neque insidiis noctis capiere serenae.*

1:424-6 (Virgilius 1988, p.1:49)

But if you mark the scorching sun and mark  
The moon's successive phases, then tomorrow  
Never will catch you by surprise

(Wilkinson 1982, p.70)

### Chapter 6.3

For the long haul of field work ahead,  
the young are to be shaped from their raw state,  
tamed and encouraged, their spirits composed,  
all when they are tender, pliable and quick-witted.  
First hold their necks loosely bound in thin osier hoops,  
thus from freedom they slip into service,

3:163-168

*Tu quos ad studium atque usum formabis agrestem,  
iam vitulos hortare viamque insiste domandi,  
dum faciles animi iuvenum, dum mobilis aetas.  
Ac primum laxos tenui de vimine circlos  
cervici subnecte; dehinc, ubi libera colla  
servitio adsuerint, ipsis e torquibus aptos  
iunge pares et coge gradum conferre iuencos;*

3:163-168 (Virgilius 1988, p.2:7)

Those you will educate for farm employment  
On special duties you must first encourage  
In calfhood, and begin their discipline  
While still their spirits are at the docile age.  
First tie around their necks thin osier-nooses;  
Then, when the freeborn necks are now accustomed  
To servitude,

(Wilkinson 1982, p.104)

With no time to lose, he acted on his mother's instructions  
and came to the temple, leading the chosen four best bulls  
prepared and displayed their bodies on the altar  
with four supple heifers, their necks never yoked.  
Then, when nine consecutive sunrises had tinged the sky  
he returned to the place, to that tomb of Orpheus.  
There, as truly as he had been told – a miracle –  
the shrill buzz of a swarm, from flesh,  
as if in afterbirth from a womb, wild bees seething  
up and out of the ribs and away – a dense cloud  
that swelled to the tree tops, melted from the twigs,  
and deluged down in bunches of sweetness.

4:548-558

*Haud mora; continuo matris praecepta facessit;  
ad delubra venit, monstratas excitat aras,  
quattuor eximios praestanti corpore tauros  
ducit et intacta totidem cervice iuencas.  
Post, ubi nona suos Aurora induxerat ortus,  
inferias Orphei mittit lucumque revisit.  
Hic vero subitum ac dictu mirabile monstrum  
adspiciunt, liquefacta boum per viscera toto  
stridere apes utero et ruptis effervere costis,  
immensasque trahi nubes, iamque arbore summa  
confluere et lentis uvam demittere ramis.*

4:548-558 (Virgilius 1988, p.2:35)

Without delay he did his mother's bidding,  
Came to the shrines and put in action there  
The altars she prescribed, then brought to them  
Four bulls superb in body and as many  
Heifers whose necks had never felt the yoke.  
Then, after the ninth rising of the dawn,

He returned to the grove. There suddenly is seen  
A miracle: throughout the putrid flesh  
Of the oxen's innards bees are buzzing, swarming,  
Bursting from holes in the flanks, and trailing off  
In a huge cloud to mass at the top of a tree  
And hang in clusters from the sagging branches.

(Wilkinson 1982, p.142)



What God have we here, Muses, who forges such bonds?  
Who makes us embark on such enterprising madness?

4: 315,6

*Quis deus hanc, Musae, quis nobis extudit artem?  
Unde nova ingressus hominum experientia cepit?*

4:315-6 (Virgilius 1988, p.2:28)

Muses, what deity fashioned for us  
This craft, or whence did this new human practice  
Receive its impulse?

(Wilkinson 1982, p.135)

The horse, once the hero, now stumbles  
 his eagerness for grass and spring water gone  
 he fretfully paws the ground, his sky-held head  
 now hangs discouraged, in that sweat between life  
 and death, his pelt doesn't warm to your touch,  
 and before the day dies, the signs progress to worse,  
 his eyes burn, his breath drags in wearily  
 he moans all along his length  
 he coughs up blackened blood  
 it clogs his throat, wells from his nostrils,  
 harsh sobs possess his tongue.  
 In desperation some thought it would help  
 to moisten the throat with wine,  
 dribbled gently in through a horn  
 but this makes them burn all the more,  
 with a freshly ignited frenzy –  
 O, if only the good were spared  
 and madness reserved for the wicked –  
 yet with their own teeth they tear their limbs raw.

3:498-514

*Labitur infelix studiorum atque immemor herbae  
 victor equus fontisque avertitur et pede terram  
 crebra ferit; demissae aures, incertus ibidem  
 sudor et ille quidem morituris frigidus, aret  
 pellis et ad tactum tractanti dura resistit.  
 Haec ante exitium primis dant signa diebus;  
 sin in processu coepit crudescere morbus,  
 tum vero ardentes oculi atque attractus ab alto  
 spiritus, interdum gemitu gravis, imaque longo  
 ilia singultu tendunt, it naribus ater  
 sanguis et obsessas fauces premit aspera lingua.  
 Profuit inserto latices infundere cornu  
 Lenaeos; ea visa salus morientibus una;  
 mox erat hoc ipsum exitio, furiisque refecti*

*ardebant ipsique suos iam morte sub aegra,  
di meliora piis erroremque hostibus illum,  
discissos nudis laniabant dentibus artus.*

3:498-514 (Virgilius 1988, p.2:17)

The once victorious racehorse sinks, his keenness  
Wilting, forgets to feed, refuses drink.  
He paws the ground incessantly; his ears  
Droop and a fitful sweat breaks out around them,  
The chilly sweat of death; his skin is dry,  
Hard to the touch, insensible to stroking.  
But as the worsening sickness takes its course  
His eyes become inflamed, his breath deep-drawn  
Laden at times with groans; and bouts of sobbing  
Shudder throughout his flanks; a gush of blood  
Comes from his nostrils and his roughened tongue  
Chokes his blocked throat. Relief was sought  
By pouring wine through an inserted horn.  
That seemed the only hope of cure; but soon  
(God blind the wicked so, but spare the just!)  
This is itself proved fatal; stimulated,  
They blazed with frenzy and, though sick to death,  
Tore at their bodies with their own bare teeth.

(Wilkinson 1982, p.116)

What makes joyful fields? Under which stars to turn  
the earth, Maecenas, how to marry elms and vines,  
what are the worries with cattle, how to harness  
a cultivated herd, what trials make bees thrive?  
From here I'll start to sing. You: bright, generous  
Lights, engraving the sky, you charm the year home  
Liber and kind Ceres who gracefully for the earth  
swops acorns of Chaonia for brisk oats, sleek corn,  
who sees that Acheloia's river is blended with trampled grapes  
and you, the fauns who people the countryside,  
cavorting with wood-nymphs,  
I sing about all of this. And you Neptune, from whom  
the first glorious horse thundered at your trident's rhythm,  
and you, keeper of the woods, who tends  
three hundred snow-white bullocks, grazing them fat at Ceos;  
and to the one who flows and leaps in springs at Mount Lycaeus,  
and Pan who herds sheep at Tegea's mountains,  
be close at hand, also Minerva who favours us with olives  
and the boy who pointed out the plough,  
and mild Silvanus, rooted in the winds of the Cyprus trees,  
in fact: be present all goddesses devoted to fallow lands or fields  
may the fruitful heavens plunge to shower earth...

1: 1-24

*Quid faciat laetas segetes, quo sidere terram  
vertere, Maecenas, ulmisque adiungere vitis  
conveniat, quae cura boum, qui cultus habendo  
sit pecori, apibus quanta experientia parcis,  
hinc canere incipiam. Vos, o clarissima mundi  
lumina, labentem caelo quae ducitis annum,  
Liber et alma Ceres, vestro si munere tellus  
Chaoniam pingui glandem mutavit arista,*

*poculaque inventis Acheloia miscuit uvis;  
 et vos, agrestum praesentia numina, Fauni,  
 fert simul Faunique pedem Dryadesque puellae:  
 Munera vestra cano. Tuque o, cui prima frementem  
 fudit equum magno tellus percussa tridenti,  
 Neptune; et cultor nemorum, cui pinguia Caeae  
 ter centum nivei tondent dumeta iuveni;  
 ipse nemus linquens patrium saltusque Lycae,  
 Pan, ovium custos, tua si tibi Maenala curae,  
 adsis, o Tegeae, favens, oleaeque Minerva  
 inventrix, uncique puer monstrator aratri,  
 et teneram ab radice ferens, Silvane, cupressum,  
 dique deaeque omnes, studium quibus arva tueri,  
 quique novas alitis non ullo semine fruges,  
 quique satis largum caelo demittitis imbrem;  
 tuque adeo, quem mox quae sint habitura deorum  
 concilia, incertum est, urbisne invisere, Caesar,  
 terrarumque velis curam et te maximus orbis  
 auctorem frugum tempestatumque potentem  
 accipiat, cingens materna tempora myrto,  
 an deus inmensi venias maris ac tua nautae  
 numina sola colant,*

1: 1-24 (Virgilius 1988, p.1:37)

What makes the corn crops glad, under which star  
 To turn the soil, Maecenas, and wed your vines  
 To elms, the care of cattle, keeping of flocks,  
 All the experience thrifty bees demand –  
 Such are the themes of my song.

You brightest lamps  
 That lead the year's procession across the sky;  
 Liber and nurturing Ceres, since your grace  
 Procured that earth should change Chaonia's acorns  
 For the rich ears of grain, and grapes be found  
 For lacing cups of Achelous' water;

You too, the present help of farmers, Fauns  
(Come Fauns and Dryad maidens, dance together:  
Yours are the gifts I sing); and you for whom  
The earth, smitten with your great trident, first  
Brought forth the champing horse, Neptune; and you,  
Haunter of woods, for whom in Cea's brakes  
Three hundred snow-white bullocks crop rich pasture;  
Yourself, leaving the high Arcadian glades,  
Your birthplace, Pan of Tegea, graciously  
Draw near; Minerva who revealed the olive,  
The boy-inventor of the curving plough,  
Silvanus with a young uprooted cypress,  
Come you, and all the gods and goddesses  
Who love to guard the country, you who foster  
New fruits unsown, and you who from the sky  
Send down abundant showers upon the sown.

(Wilkinson 1982, p.57)

In earnest, no expense spared, they turn their minds  
to shape - one male, prime law and model, rich for the cattle.  
They bring flowering cut grass, a flow of grain,  
he is not to be coaxed to work,  
in case his returns weaker births.  
For her part, they hold the herd willing,  
agitated even, confine her, denying leafy fodder,  
though it is spring...soon...  
daily they run her until she is dizzy, aching  
as the grain beaten on the floor of the grange,  
the husks risen and away with the west wind.  
Thirsty, furrowed as a ploughed field  
she will deeply grasp, hidden, what her heart wants.

3: 123-137

*His animadversis instant sub tempus et omnis  
impendunt curas denso distendere pingui,  
quem legere ducem et pecori dixere maritum;  
florentisque secant herbas fluviosque ministrant  
farraque, ne blando nequeat superesse labori  
invalidique patrum referant ieiunia nati.  
Ipsa autem macie tenuant armenta volentes,  
atque, ubi concubitus primos iam nota voluptas  
sollicitat, frondesque negant et fontibus arcent.  
Saepe etiam cursu quatiunt et sole fatigant,  
cum graviter tunsis gemit area frugibus et cum  
surgentem ad Zephyrum paleae iactantur inanes.  
Hoc faciunt, nimio ne luxu obtunsior usus  
sit genitali arvo et sulcos oblimet inertis,  
sed rapiat sitiens Venerem interiusque recondat.*

3: 123-137 (Virgilius 1988, p.2:6)

With this in mind as breeding time draws near,  
They set to work and take the greatest care  
To fatten with firm flesh their chosen leader,  
The destined lord of the herd. For him they cut  
Flowering herbs, thy ply him with fresh water  
And corn, to make him no deficient master  
Of his seductive task and let no leanness  
Transmitted from the sire affect the young.  
As for the dams, they keep them spare on purpose,  
And when they observe by tell-tale signs the stirring  
Of sexual desire; withhold their fodder  
Of leaves and bar them from their drinking-places;  
And often too they harass them with running  
And sweat them in the sun; this at the season  
When the threshing floor is groaning with pounded grain  
And empty chaff flies in the freshening Zephyr.  
Their object, that no pampering should cloy  
The genital field nor clog and deaden its furrows,  
But lust be thirstily snatched and stored within.

(Wilkinson 1982, p.103)



Whatever person wishes to scale Olympian heights  
 with gleaming horses, or if he would raise vigorous oxen  
 to draw the plough, let him send a delegation to the dam.  
 At best she will be fierce in appearance, even ugly-headed,  
 taut, but with a many-folded neck, a heavy dewlap,  
 long in the side, big all over, even her feet,  
 and lovely hairy ears under curved horns.  
 If there are star-white splodges on her hide,  
 I don't mind, nor if she is wayward with her horn  
 from time to time, unrefined at the yoke,  
 bull-like in aspect, intense overall, her long tail  
 ardently sweeping the track of her hoof-prints quiet.  
 The fairest time to wed her for childbirth,  
 finishes at ten years and begins after the fourth.  
 For the rest, she is not strong enough for offspring  
 nor fit for the plough. So seed your flock  
 when the females are fertile and able, let the bulls  
 and those cattle run wild, to learn love –  
 in one way or another, you'll get your bumper crop.  
 Where are our best days? Pitiful, transient  
 mortals, our own springtime flees us,  
 we are harshly swept towards decay  
 and we only hoard hard work, old age, sadness.  
 So at all times seek to exchange unpleasant traits,  
 for beauty; root them out without fear of loss,  
 seek whatever you need to refashion  
 next year's cohort, your annual portion.

3:49-71

*Seu quis Olympiacae miratus praemia palmae  
 pascit equos, seu quis fortis ad aratra iuuenos,  
 corpora praecipue matrum legat. optima toruae  
 forma bouis cui turpe caput, cui plurima ceruix,  
 et crurum tenus a mento palearia pendent;  
 tum longo nullus lateri modus; omnia magna,*

*pes etiam, et camuris hirtae sub cornibus aures.  
nec mihi displiceat maculis insignis et albo,  
aut iuga detrectans interdumque aspera cornu  
et faciem tauro propior, quaeque ardua tota  
et gradiens ima uerrit uestiga cauda.  
aetas Lucinam iustosque pati hymenaeos  
desinit ante decem, post quattuor incipit annos;  
cetera nec feturae habilis nec fortis aratris.  
interea, superat gregibus dum laeta iuuentas,  
solue mares; mitte in Venerem pecuaria primus,  
atque aliam ex alia generando suffice prolem.  
optima quaeque dies miseris mortalibus aeui  
prima fugit; subeunt morbi tristisque senectus  
et labor, et durae rapit inclementia mortis.  
semper erunt quarum mutari corpora malis:  
semper enim refice ac, ne post amissa requiras,  
ante veni et subolem armento sortire quotannis.*

3:49-71 (Virgilius 1988, p.2:4)

Whether a man breeds horses, coveting  
Olympic palms, or sturdy steers for ploughing,  
Let him look above all to the features of the dam.  
The champion cow looks fierce, her head uncouth,  
Her neck thickset, her dewlaps pendulous  
From jaw to legs, her flanks as long as they can be,  
All on a big scale, even her feet. The ears  
Under her crooked horns are shaggy. A hide  
Brindled with white is not a disadvantage.  
Impatience of the yoke, a tendency  
To angry butting and a bull-like face  
Are not amiss. She should be tall throughout  
And sweep her tracks behind her with her tail.  
The age for lawful wedlock and for childbirth  
Begins with four years, ceases with the tenth.  
For the rest of her life she's neither fit for breeding  
Nor strong enough for ploughing. Within those years  
Cattle are young and lusty: lose the males  
Among them, be the first to put your beasts  
To mating, breed and breed again your stock.  
Life's earliest years for wretched mortal creatures  
Are best, and fly most quickly; soon come on  
Diseases, suffering and gloomy age,  
Till Death's unpitying harshness carries them off.  
Dams there will always be with whose appearance  
You are not satisfied; replace them always  
Or you'll regret your loss; anticipate  
And every year select new stock for breeding.

(Wilkinson 1982, p.101)

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